CCD-V6000E
RMT-500

SERVICE MANUAL

AEP Model
UK Model
Australian Model
E Model

SONY
Video Hi8
10

Hi8 PRO

U MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅲ" (9-972-732-11).

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Standard: Rotary head, FM system (2 channels) PCM: PCM system (2 channels)
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 2.0051 cm/sec. LP: Approx. 1.0058 cm/sec.
Recording time	SP mode: 1 hour 30 min. LP mode: 3 hours (E5/P5–90)
Playback time	SP mode: 1 hour 30 min LP mode: 3 hours (E5/P5–90)
Fast forward/rewind time	Approx. 7 min. (E5/P5–90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 10 × power zoom lens f=8 – 80 mm, F1.8 with macro Filter diameter: 52 mm
Auto focus system	TTL
Color temperature	Auto: One push white balance INDOOR 3,200 K OUTDOOR 5,800 K
Minimum illumination	3 lx (F1.8)
Illumination range	3 lx – 100,000 lx (0.3 – 9,294 footcandles)
Recommended illumination	More than 100 lx (9.3 footcandles)
Aperture correction	Automatic, manual (variable)

MICROFILM

PCM

Sampling frequency	31.5 kHz
Audio frequency	20 Hz – 15 kHz
Dynamic range	More than 85 dB
Wow and flutter	Less than 0.005% RMS

Input and output connector

Video output	Phono jack (1), 1 Vp-p, 75 ohms unbalanced, sync negative

– Continued on next page –

- **SERVICE OF REMOTE COMMANDER RMT-500**

Remote commander RMT-500 is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

8 VIDEO CAMERA RECORDER

SONY®

S video output	4-pin mini-DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.300 Vp-p, 75 ohms, unbalanced
Audio output	Phono jacks (3: L, R and monaural), –7.5 dBs, loaded by 47 kilohms, output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5V DC
Video input	Phono jack (1), 1 Vp-p, 75 ohms, unbalanced, sync negative
S video input	4-pin mini-DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.300 Vp-p, 75 ohms, unbalanced
Audio input	Phono jacks (2: L, R), –7.5 dBs, input impedance more than 47 kilohms
Headphones jack	Stereo minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
Microphone jacks	External microphone jacks: phone jack (2), –66 dBs, low impedance External narration microphone jack: minijack, –66 dBs, low impedance

General

Power requirements	on the battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor)
Power consumption	12 W (camera recording)
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions	Approx. 190 × 235 × 430 mm (w/h/d) ($7\frac{1}{2} \times 9\frac{3}{8} \times 17$ in.) Including the lens hood
Weight	Approx. 3 kg (6 lbs 10 oz) excluding the battery pack, lithium battery,cassette, and jack cover Approx. 3.3 kg (7 lb 4 oz) including the battery pack NP-77H, lithium battery CR2025, cassette E5-90, and jack cover
Microphone	Electret condenser microphone ×2 uni-directional stereo type
Narration microphone	Electret condenser microphone, omni-directional monaural type
Accessories supplied	• Wireless Remote Commander (1) • R6 batteries (2) • Battery pack NP-77H (1) • AC power adaptor AC-V50 (1) • Lithium battery CR2025 (1) • Shoulder strap (1) • Jack covers* (1 set) • Lens cap (1) (Attached to the camcorder) • A/V connecting cord (3 phono to 3 phono) (1) • Video cable with S video connectors (4-pin mini-DIN to 4-pin mini-DIN) (1)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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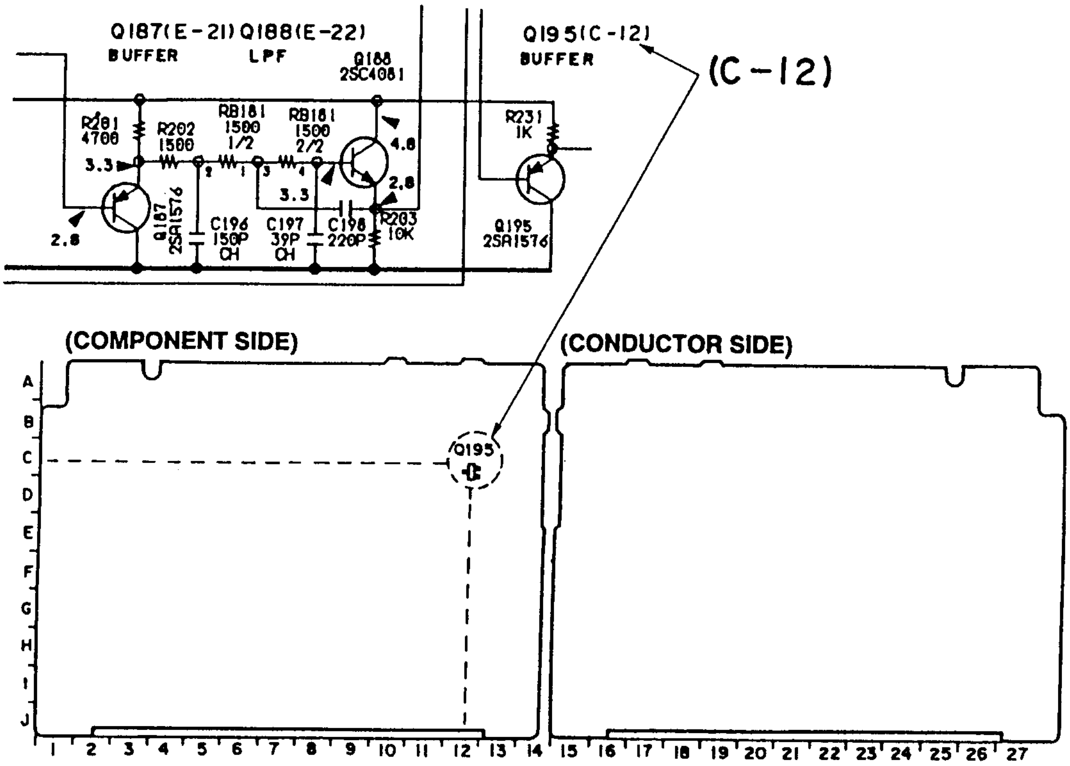
There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
R231
1K
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
A
B
C
D
E
F
G
H
I
J
Q195
1
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[SERVICE MODE]

In this instrument service mode is provided in orders to know the set satus and for the electric adjustment of camera.
This operation in made by full adjustment remote controller (J-6082-053-B).

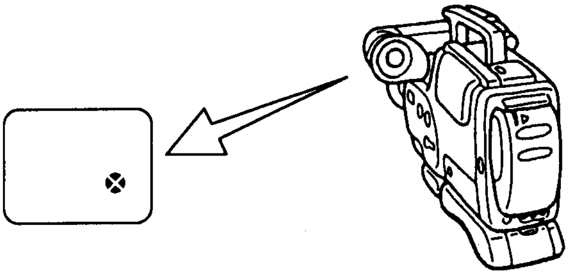
- For adjustment of EVR (Electronic Variable Resistor) of camera.
  ......SDJUST MODE → Refer to page 290.
  (7-1-4. Adjustment Remote Controller)
- For checking the set status
  ......STATUS INDICATION MODE
  (STATUS MODE) → Refer to page 340.
  (9-1-8. Service Mode)

[CHECK FOR HEAD CLOGS AND REMEDY]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

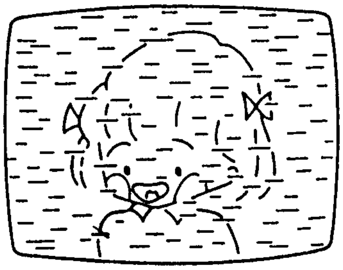
Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [❖] mark is flashing in the viewfinder at this time, head clogs are occurred.

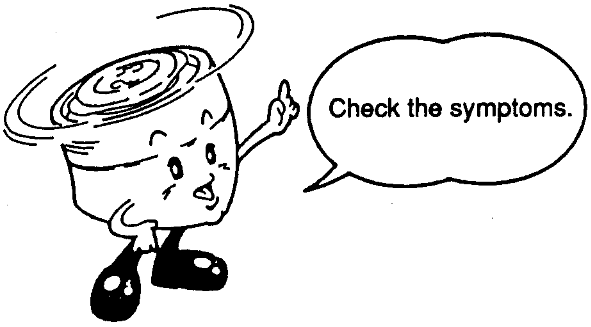


Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.



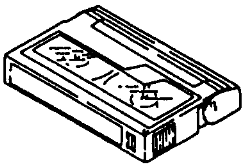
The state the image flickers by noise on the screen.


Check the symptoms.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape for Hi8. (Please follow the instructions attached to the cleaning tape.)



SECTION 1
GENERAL

This section is extracted from instruction manual.

Technical Information

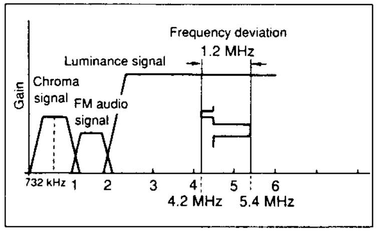
Hi8 (High Eight) Video System

The 8 mm video system employs a metal powder tape. This means the video camera recorder is capable of recording a large amount of information and enhances picture quality. Taking advantage of the 8 mm video system, the Hi8 video system has been developed. The main characteristics of the Hi8 video system are as follows:

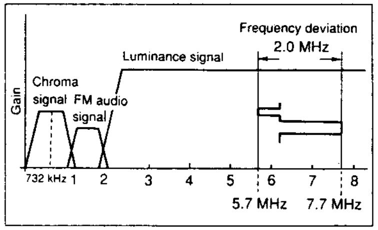
Super High Quality Picture

The information capacity is a key element for picture improvement. It can be increased by shifting up the FM carrier frequency range. In the Hi8 video system, the FM carrier frequency range of the luminance signal is shifted up to 5.7–7.7 MHz. This is higher than the 4.2–5.4 MHz range of the standard 8 mm video system. Thanks to this, the horizontal resolution is improved to more than 400 lines.

Frequency allocation of the standard 8 mm video system



Frequency allocation of the Hi8 video system



Compatibility with Conventional Video Camera Recorders

A high-quality picture can be recorded and played back on a tape for the Hi8 video system.

Recording with this unit

Hi8 tape **Hi8**

Hi8 mode switch to AUTO → Tape recorded in the Hi8 video system

Hi8 mode switch to OFF → Tape recorded in the standard 8 mm video system

Standard 8mm tape 8

Regardless of the position of the Hi8 mode switch → The recorded in the standard 8 mm video system

Recording with this unit

Tape recorded in the Hi8 video system
Tape recorded in the standard 8 mm video system
} → The recording mode is selected automatically

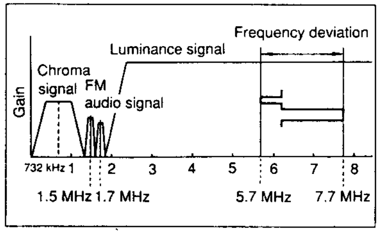
- A tape recorded in the Hi8 video system cannot be played back with an conventional 8 mm video camera recorder.
- A standard 8 mm tape 8 cannot be recorded in the Hi8 video system.
- A tape for the Hi8 video system **Hi8** cannot be recorded and played back in the Hi8 video system with a conventional video camera recorder.
- The recording tape speeds in the Hi8 video system are compatible with the conventional 8 mm format.
  Recording/playback time is 1.5 hours using a E5/P5-90 tape or the equivalent.

Cassette used	With this unit		
	Recording		Playback
	Hi8	Normal	
Standard 8 mm tape 8	No	Yes	Yes
Hi8 tape **Hi8**	Yes	Yes	Yes

Hi-Fi Stereo System

On the 8 mm video standard track the sound is recorded/played back in AFM hi-fi monaural. The PCM digital stereo sound is recorded/played back on the PCM track as an option.
On this unit, in addition to PCM digital stereo sound, the AFM hi-fi stereo sound can be recorded on the standard track.
To maintain compatibility with the conventional AFM hi-fi monaural sound, the AFM hi-fi stereo sound is recorded as the L–R sound using the 1.7 MHz carrier and the L+R sound using the 1.5 MHz carrier as the FM audio signal.
To play back the tape recorded by its hi-fi stereo system, this unit uses a matrix circuit to produce the L and R stereo sounds separately. When a conventional AFM hi-fi monaural system model is used to play back a tape recorded in AFM hi-fi stereo, it will produce the L+R monaural sound because the monaural model can reproduce only the 1.5 MHz carrier. The AFM hi-fi stereo system of this unit allows you to enjoy a live stereo sound atmosphere even with the standard track.

Frequency allocation of the hi-fi stereo system



Compatibility with conventional 8 mm video format
When you play back an AFM stereo hi-fi recorded tape with a conventional 8 mm video equipment, a sound is reproduced in monaural.

TBC (Time Base Corrector)

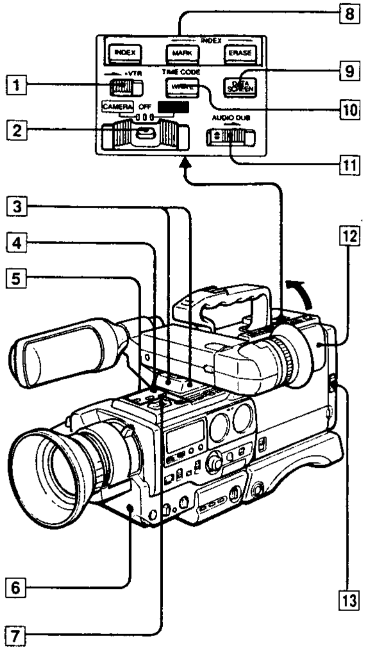
During playback, the TBC is automatically turned on to reduce jitter and further enhance the high quality of the picture recorded in the Hi8 video system.

On Jitter
A signal recorded on the tape is demodulated to its original video signal through the rotating magnetic head. During this process, time base fluctuations due to uneven rotation of the head and varying tape running speed are added to the demodulated video signal. These time base fluctuations that occur with video equipment are called jitter. As long as the monitor can scan the fluctuation, no effect is produced on the image. However, when the jitter exceeds a certain limit, the image becomes unstable and a swaying motion or bend is produced on the monitor. For the Hi8 video system, particularly with its more than 400 lines of horizontal resolution and precise reproduction of the fine vertical lines, eliminating jitter will contribute greatly to further enhancing the picture quality.

Basic Principles of TBC
The write clock based on the synchronized signal (H, V) separated from the video signal temporarily writes the video signal with jitter to the field memory which the digital TBC uses. The stable read clock reads the signal data one by one in the order in which they were written in memory, and produces the video signal output without the jitter. When you repeat editing over and over, jitter accumulates and might corrupt the synchronized signal, thus causing the image to bend. The digital TBC with its field memory produces the synchronized signal output separately from the video signal after rewriting it into a stable one. Therefore, if you use this unit as the playback machine during editing for the purpose of reducing jitter, it will be effective in removing the image bend that occurs due to corruption of the synchronized signal. The TBC also reduces jitter caused by incompatibility (jitter which occurs when the recording machine and playback machine are of a different make). This unit is therefore highly suitable for use as the master unit.

Location and Function of Parts and Controls

(A-1)



For details on the use of each control, refer to the pages indicated in the circle.

(A-1)

1 +VTR switch (50) (91)
During recording, to operate the buttons for the VTR, slide in the direction of the arrow.

2 POWER switch
CAMERA: For camera recording
VTR: For playing back or editing tapes with another equipment connected to the VIDEO/AUDIO INPUT or OUTPUT jacks.
OFF: Power off

3 Remote control detector ⑯

4 COMMANDER ON/OFF switch
Set to “ON” when using the supplied wireless Remote Commander. When you do not use the supplied Remote Commander or when you connect the receiver of the remote control kit (not supplied) to the REMOTE connector, set to “OFF”.

5 Digital picture buttons (61)
Press to make the digital pictures.
DIGITAL ZOOM button
P in S button
FADER/OVERLAP button
PICTURE button

6 INDEX MARK button ㊱
Press to mark the index signal **during recording.**

7 EDITSEARCH button ㉘ ㉚ (51)

8 INDEX buttons (75)
INDEX: Press to search the index signal marked.
MARK: Press to mark the index signal.
ERASE: Press to clear the index signal.

9 DATA SCREEN button (73)
Press to display the indication on the viewfinder screen on the TV.

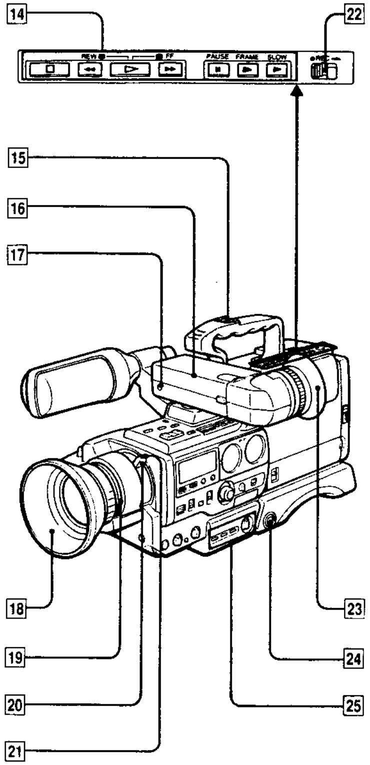
10 TIME CODE WRITE button (80)
Use this button to write, rewrite or add the RC time code on the prerecorded tape.

11 AUDIO DUB (dubbing) button (90)
Slide to dub the audio signals.

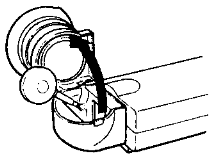
12 Speaker
During recording or playback, the monaural sound will be monitored.

13 BATT (battery eject) knob ⑱

(A-2)



(A-3)



(A-2)

14 Tape transport buttons
□ (stop), ◀◀ REW (rewind), ▷ (playback),
▶▶ FF (fast forward), ▮▮ PAUSE (pause),
▮▮▶ FRAME (frame-by-frame playback),
▮► SLOW (slow speed playback)

15 Accessory shoe
Attach a video light, etc.

16 Viewfinder
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

17 Camera recording/battery/tape end lamp
Lights during camera recording. It flashes when the battery is exhausted or the tape is at its end.

18 Lens hood

19 Focus ring ㊴

20 Zoom lever ㊺

21 Macro set button ㊻

22 ● REC (recording) switch
Slide in the direction of the arrow.

23 Eyecup

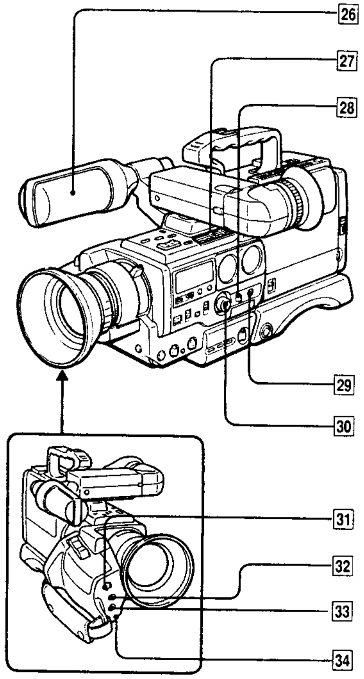
24 PUSH SLIDE button ㉕
While pressing this button, adjust the position of the shoulder mount.

25 Digital picture buttons (61)
Press to make the digital pictures.
STROBE button
SOLARIZATION button
NR (noise reduction) button
EFFECT LEVEL control

(A-3)

To remove dust from inside the viewfinder
Open the eyecup and remove the dust with a blower.

(A-4)



(A-4)

[26] One point stereo microphone

[27] SUPERIMPOSE buttons (53)
Used to record the title.
TITLE 1 button
TITLE 2 button
MEMORY button
COLOR/MODE button

[28] BALANCE control ㉟
The left/right channel balance of the microphone or input signal from the AUDIO INPUT jack can be adjusted.

[29] MIC switch ㉖ (90)
AUTO: Normally set to this position.
MANU: Set to adjust the volume or left/right channel balance of the microphone or input signal from the AUDIO INPUT jack.

[30] REC LEVEL control ㉟
The volume of the microphone or input signal from the AUDIO INPUT jack can be adjusted. Normally set to the green position.

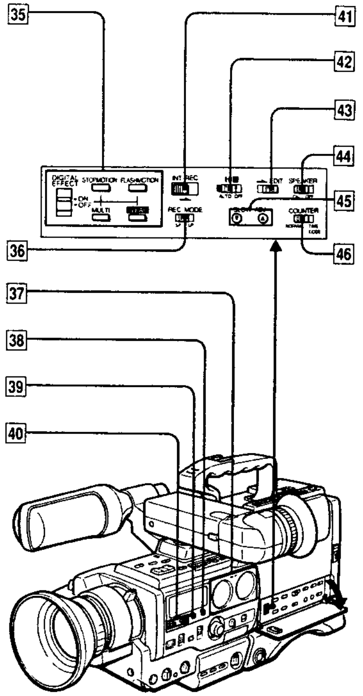
[31] START/STOP button ㉖
Used for low position recording.

[32] NAR. MIC (narration microphone) jack (mini jack) ㉞
Connect an external narration microphone

[33] PHONES jack (stereo mini jack) ㉞
Connect the ear receiver.

[34] PHONE LEVEL control ㉙
During playback, the sound level of the speaker or connected ear receiver can be adjusted.

(A-5)



(A-5)

[35] Digital picture buttons (68)
Press to make the digital pictures.
DIGITAL EFFECT switch
STOPMOTION button
FLASHMOTION button
MULTI button
CLEAR button

[36] REC MODE selector

[37] Level Meters and indicator ㉟

[38] ZERO MEM (zero memory) button (65)
Used to memorize the counter zero point.

[39] COUNTER RESET button (85)
Press to reset the counter to zero.

[40] DATE (+)/TIME (NEXT)/DATA CODE buttons
Use these buttons to set the date and time, display the date and time, or display the data code during playback.

[41] INT REC (interval recording) button ㊿
Slide to activate the automatic interval recording function.
The picture can be recorded for approximately one second every one minute.

[42] Hi8 (high eight) mode switch ㉖
When set to the AUTO (green mark) position, the recording mode will be selected automatically according to the tape to be used.

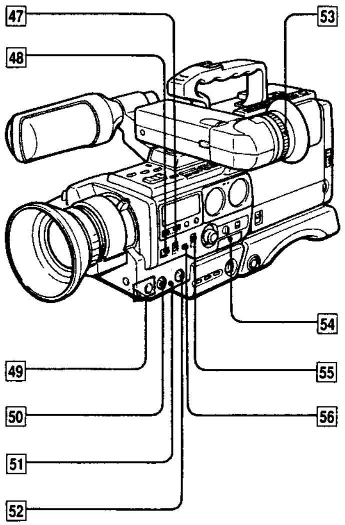
[43] EDIT switch (89)
Normally set it to the OFF position. When editing tapes, set in the direction of the arrow (ON).

[44] SPEAKER switch ㉙
During recording or playback, set to ON to monitor the sound.

[45] SLOW ADJ (adjustment) buttons (72)

[46] COUNTER mode select switch
NORMAL: Normally set to this position to display the tape counter.
TIME CODE: Set to this position to display the RC time code in the viewfinder and display window, and output from the REMOTE connector.

(A-6)



(A-6)

[47] **FOCUS switch** ㊴
Used for manual focusing.

[48] **AUTO LOCK switch** ㉖ ㊲
Normally set to the upper AUTO LOCK position (green mark).
To adjust the focus, white balance, iris, gain level or shutter speed manually, set to the lower position (white mark).

[49] **IRIS control** ㊸
Normally set to the center position (green mark).

[50] **WHT BAL (white balance) control** ㊷
Used for manual white balance adjustment.

[51] **(one push white balance) button** ㊷
Press to adjust the white balance precisely.

[52] **SHUTTER SPEED button** ㊹
Used to select the shutter speed.

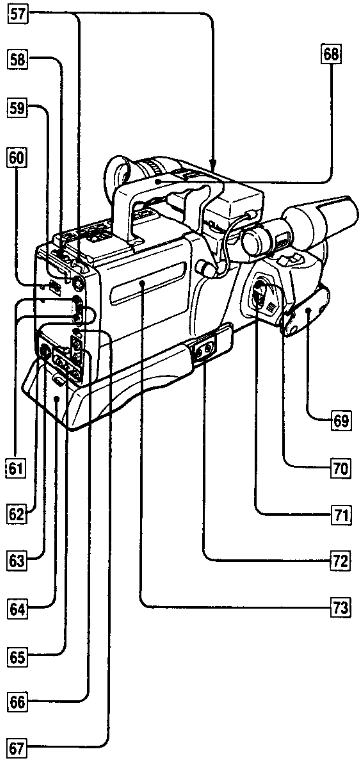
[53] **Viewfinder lens adjustment ring** ㉔
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

[54] **NARRATION MIC button** ㉝
Press to record your narration. When the PUSH mark is pressed, the microphone will be out.

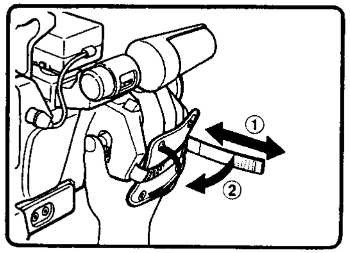
[55] **GAIN switch** ㊸
Set to 0dB or 18dB when the scene to be recorded is too dark.

[56] **PUSH AUTO button** ㊵
While recording with manual focusing, to set the unit into automatic focusing momentarily, press this button.

(A-7)



69



(A-7)

[57] **Hooks for shoulder strap** ⑯
Attach a shoulder strap.

[58] **EJECT (Cassette eject) button** ㉓

[59] **S VIDEO OUTPUT connector (4-pin mini-DIN)** (69) (83)

[60] **DC IN connector**

[61] **VIDEO/AUDIO OUTPUT jacks (phono jacks)** (69) (82) (83)

[62] **RFU DC OUT (RFU adaptor DC output) jack (special minijack)** (70) (84)
Supplies power to the RFU adaptor.

[63] **S VIDEO INPUT connector (4-pin mini-DIN)** (83) (84)

[64] **Utility compartment**
Insert the earphone, etc.

[65] **VIDEO/AUDIO INPUT jacks (phono jacks)** (83) (84)

[66] **AUDIO OUTPUT jacks (phono jacks)** (69) (83)

[67] **AUDIO MONITOR switch** (74)
Selects the sound to be monitored during playback.

[68] **Carrying handle**

[69] **Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.

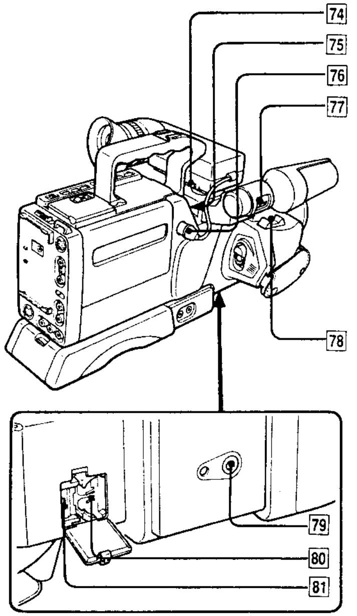
[70] **STANDBY switch** ㉖
Slide up to set the unit to recording pause mode.

[71] **START/STOP button**
Press to start and stop camera recording.

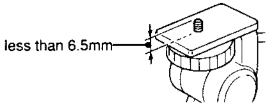
[72] **MIC (external microphone) jacks (phone jacks)** ㉝ (90)

[73] **Cassette holder**

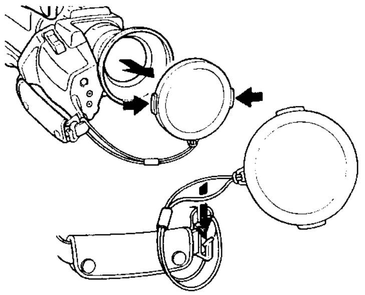
(A-8)



(A-9)



(A-10)



(A-8)

74 **PUSH SLIDE button** ㉕
Press to adjust the position of the viewfinder.

75 **REMOTE ⅽ connector**

76 **VIEWFINDER connector** ⑯

77 **MIC (microphone) SELECT switch** ㉜
Normally set to the left (green mark) position.

78 **Variable power zoom button** ㊺

79 **Tripod receptacle**

80 **Lithium battery compartment** ㉒

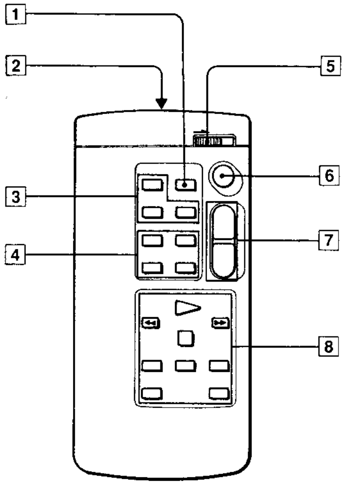
81 **Hi-fi sound output select switch** (74)

Note when attaching a tripod not manufactured by Sony (A-9)
When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5 mm. Otherwise the screw may damage the inner parts of the camera.

To remove the lens cap (A-10)
Squeeze the sides as shown.
Hook the lens cap to the grip strap.

About the ⅽ
ⅽ means the LANC connector.
LANC stands for Local Application Control Bus System. The LANC connector is used for controlling the tape transport of video equipment and peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

(A-11)



Remote Commander

(A-11)

The buttons on the Commander have the same function as the buttons on the recorder with the similar name or mark.
When you use the Remote Commander
Be sure to set the COMMANDER ON/OFF switch on the camcorder to "ON" and then start operating the camcorder. Point the Remote Commander to the remote sensor on the camcorder.

1 **DATA SCREEN button** (73)

2 **Transmitter**

3 **INDEX buttons** (75)
INDEX button
MARK button
ERASE button

4 **Digital picture buttons** (68)
Press to make the digital pictures.
MULTI button
ZOOM button
FLASH MOTION button
CLEAR button

5 **HOLD button**
To avoid miss operation, set in the direction of the arrow.

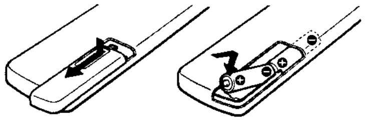
6 **START/STOP button**

7 **Power zoom button** ㊺
The size of the subject in the scene can be changed.
The zooming speed cannot be changed with this button.

8 **Tape transport buttons**
◀◀ REW button, ▷ **PLAY** button,
▶▶ FF button, □ **STOP** button,
● **REC** button, **PAUSE** button,
FRAME button, **SLOW** button

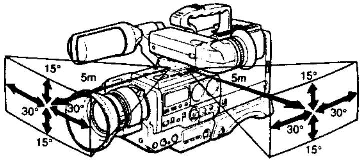
Installing the batteries (A-12)
Insert two R6 batteries with correct polarity.

(A-12)



Operation range (A-13)

(A-13)



Notes on the handling of batteries
- With normal operation, the batteries will last for approximately six months.
- If the Commander will not be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Notes on the Remote Commander
- Keep the remote sensor away from the strong light source such as direct sunlight or illumination. Remote control with the Commander may not be effective.
- Be sure that there is no obstacle between the remote sensor and Commander.
- The command mode of the Commander is VTR2. Avoid to use the Sony VTRs with the same command mode at the same time.
- Be sure to set the COMMANDER ON/OFF switch on the camcorder to "OFF" when you connect the receiver of a remote control kit (not supplied) to the REMOTE ᑕ connector.

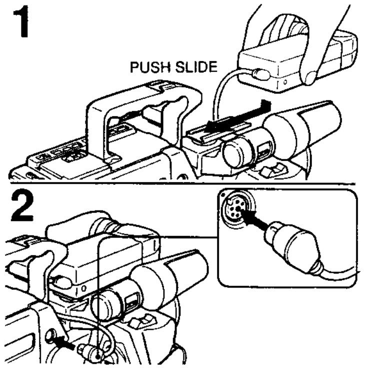
Attaching the viewfinder and the shoulder strap

Attaching the viewfinder

Before using the video camera recorder, attach the viewfinder. **(B-1)**

1 While pressing the PUSH SLIDE button, slide the viewfinder completely on the guide rail. Move the viewfinder frontward or backward a little until it locks.
2 Align the projection of the plug with the groove of the connector and connect the viewfinder cable to the viewfinder connector.

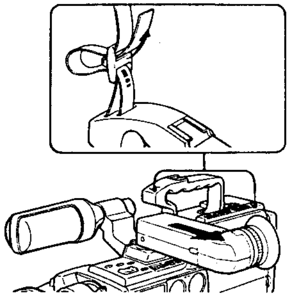
(B-1)



Attaching the shoulder strap

Slide the viewfinder as illustrated and then thread the shoulder strap. **(B-2)**

(B-2)



Connecting the Power Sources

First, Choose the Power Source

Place	Power source	Accesory to be used
Outdoors	Battery pack	Battery pack NP-77H (supplied), NP-77HD, NP-77 or NP-66H
Indoors	House Current	AC power adaptor AC-V50 (supplied)

Note on power sources
Disconnecting the AC power adaptor or removing the battery pack during recording or playback may damage the inserted tape. If this is done by accident, supply the power again immediately and turn on the power switch.

Using the Battery Pack

Step 1 : Charge the battery pack. (C-1)

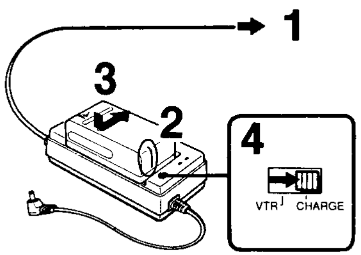
1 Connect the AC power adaptor to a wall outlet.
2 Align the grooves on the battery pack with those on the AC power adaptor.
3 Slide in the battery pack to the right, as illustrated.
4 Set the mode selector to CHARGE.
5 charge the battery for:

Battery pack	NP-77H (supplied)/ NP-77HD	NP-77	NP-66H
Required charging time	140	120	100

(approx. minutes)

See the instruction manual of the AC power adaptor for details.

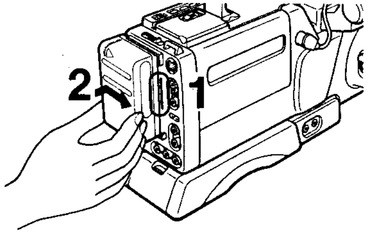
(C-1)



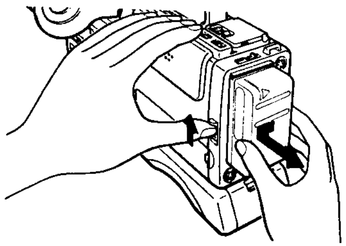
Step 2 : Mount the battery pack on the camcorder (C-2)

1 Align the right side of the battery pack with the white line on the recorder.
2 Slide in the battery pack to the right.
Note: Make sure the battery fits completely on the mounting surface of the recorder. Imperfect fit may damage the projections on the recorder.

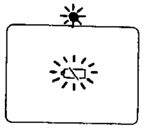
(C-2)



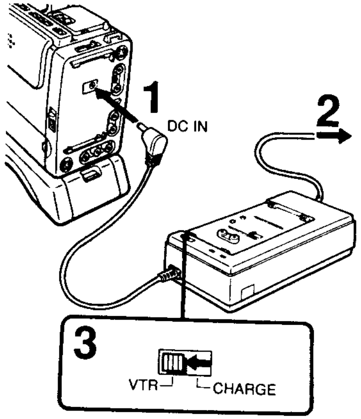
(C-3)



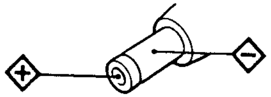
(C-4)



(C-5)



(C-6)



Connecting the Power Sources

To remove the battery pack (C-3)
Slide BATT up, and at the same time, slide out the battery pack to the left.

Battery life
A fully charged battery pack lasts for:

Battery pack	NP-77H (supplied)/ NP-77HD	NP-77	NP-66H
Battery life	40	30	25

(approx. minutes)

When the battery becomes weak, the ⊏⧵⊐ indication and red lamp will flash in the viewfinder. **(C-4)**
Replace the battery pack with a fully charged one.

- NP-55, NP-55H and NP-66 cannot be recommended for this unit because the battery life of these battery packs are too short to operate it.

Using the AC Power Adaptor

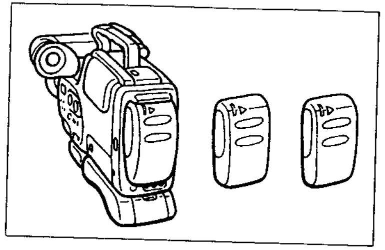
(C-5)

1. Connect the DC output plug of the AC power adaptor to the DC IN jack of the recorder.
2. Connect the AC power adaptor to a wall outlet.
3. Set the mode selector to VTR.

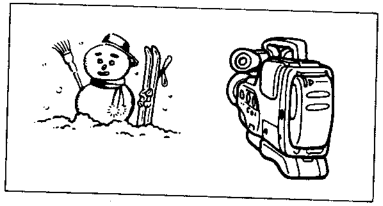
See the instruction manual of the AC power adaptor for details.

Note (C-6)
Use only the AC-V50 AC power adaptor (supplied).
Do not use any other AC power adaptor.
Polarity of the plug is shown in the illustration.

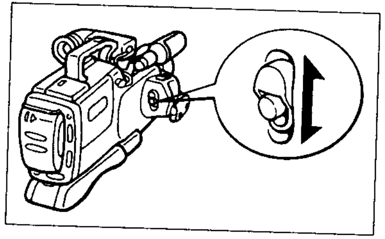
(C-7)



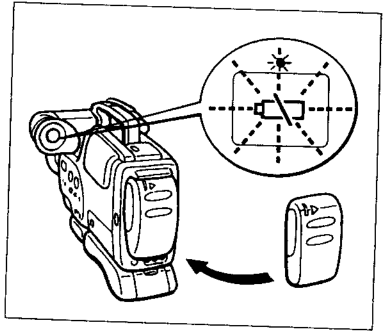
(C-8)



(C-9)



(C-10)



Connecting the Power Sources

Use of the Battery Pack

How to Prepare the Rechargeable Battery Pack

Have sufficient battery pack power to do 2 or 3 times as much recording as is planned. (C-7)
"Battery life" as described in the instruction manual or catalogue of the video camera recorder is measured by the continuous recording time of the camera, placed in a normal temperature using a fully-charged battery.

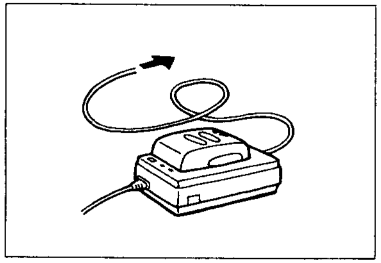
Battery life is shorter in a cold climate. (C-8)
Battery efficiency is decreased and battery life runs out more quickly.

While recording, turn the STANDBY switch of the camera on and off frequently. The battery life becomes longer. (C-9)
A smooth recording can be made even if recording is stopped and started again. While positioning the subject or selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is being expended. The battery is also being expended when a cassette is inserted or removed.

When the Rechargeable Battery Pack Should be Replaced

While recording, when the mark ⊏⧵⊐ seen in the viewfinder and red lamp change to rapid flashing from slow flashing. (C-10)
Turn off the POWER switch of the camera and replace the battery pack. Leave the cassette in the camera in order to obtain a smooth recording after the battery pack is replaced.

(C-11)



Notes on Charging

Before using the battery pack, charge it sufficiently. The Sony rechargeable battery pack is placed on the market without having been charged. **(C-11)**

Recharge the battery pack when it is exhausted.

- If recording is completed before the mark ⊏⊐ appears in the viewfinder, it is recommended to eject the cassette, set the POWER switch to CAMERA and slide up the STANDBY switch until the mark ⊏⊐ in the viewfinder flashes rapidly.
- Repeated charging while some capacity remains causes a lowering of battery capacity.

Recharge the battery pack before using if possible.

Keep the Terminals Clean

If the terminals are not clean, the battery duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, install and remove the battery pack from time to time. This will improve the contact condition. Also, wipe the ⊕ and ⊖ terminals with a soft cloth or paper.

Notes on Rechargeable Battery Pack

Why the battery pack heats up
During charging or recording, the battery pack heats up. This means that electric energy has been generated and that chemical change has occurred inside the battery pack. This is not dangerous.

How to care for the battery pack

- Remove the battery pack from the video camera recorder after using it, and keep it in a cool place.
  When the battery pack is in the video camera recorder, an infinitesimal amount of current flows to the recorder even if the POWER switch is turned off. It causes overdischarging and shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Thus, it is recommended you charge the battery just before using.

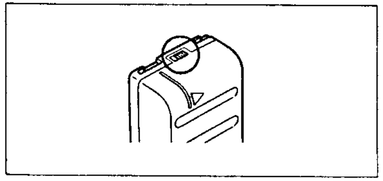
How many times can the battery pack be recharged
It can be fully charged and discharged about 500 times in normal temperature.
If the battery mark flashes rapidly just after turning on the video camera recorder with a fully-charged battery pack, the battery pack should be replaced with a new fully-charged one.

Temperatures during charging
Lower temperatures require a longer charging time.
Charging in temperatures ranging from 10°C to 30°C (5°F – 85°F) is recommended.

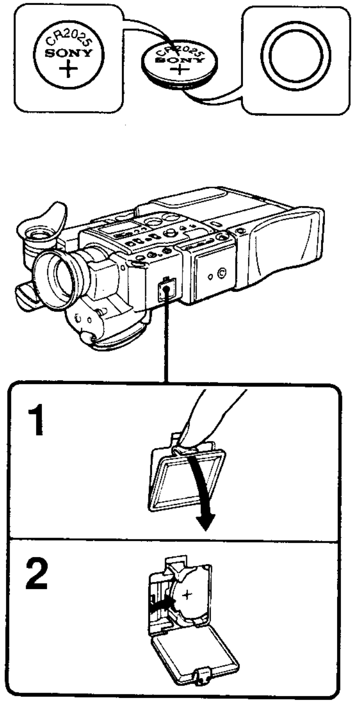
Carry the battery pack in a case.
Do not carry an uncovered battery pack. If the + and – terminals of the battery pack are shortened by a piece of metal, the battery will be heated abnormally. This is very dangerous. Never put an uncovered battery pack in a pocket with a key holder, etc.

How to use the switch on the battery pack (C-12)
This switch is provided to show you the charging condition. Set the switch to the "no mark" position when the charging is completed. Set the switch to the "red mark" position when the battery is used up.

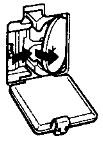
(C-12)



(C-13)



(C-14)



Connecting the Power Sources

Lithium Battery

(C-13)

To insert the lithium battery
This unit uses a lithium battery to activate the clock and to keep titles in memory. Before operating the unit for the first time, install the supplied lithium battery:

The lithium battery has a + (plus) side and – (minus) side.
Be sure to install the supplied lithium batteries with the correct polarity.

1 Open the cover of the lithium battery compartment on the bottom.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

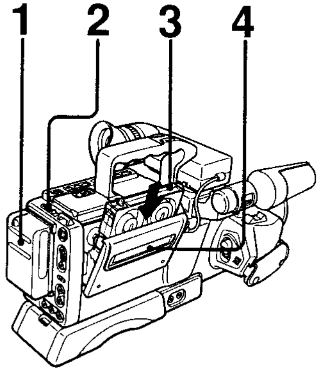
To remove the lithium battery (C-14)
Press the side of the battery in the direction indicated for installation.

Lithium battery life
Approximately 1 year in normal operation. When the lithium battery becomes weak, the numbers flash in the display window and the time indication will flash on the viewfinder screen for about 5 seconds.
In this case, **replace the battery with a Sony CR2025.** Use of any other type of battery may present a risk of fire or explosion.
After replacing the battery, readjust the date, time and titles. (If the battery is replaced with the battery pack attached, the readjustments are not necessary.)

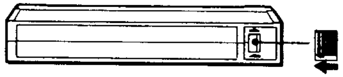
Notes on lithium battery
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- When the battery pack is not attached, even if the lithium battery is installed, the indications in the display window will not light.

WARNING
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

(D-1)



(D-2)



Inserting a Cassette

Cassette Insertion

(D-1)

1 Connect a power source.
2 Press and slide the EJECT button.
3 Insert a cassette with the window facing outside.
4 Press the cassette holder to close it.

Cassette Ejection

1 Make sure that a power source is connected.
2 Press and slide the EJECT button.
3 Take out the cassette and press the cassette holder to close it.

To Prevent Accidental Erasure

Slide out the tab on the cassette so that it covers the opening. (A red mark will appear.) **(D-2)**

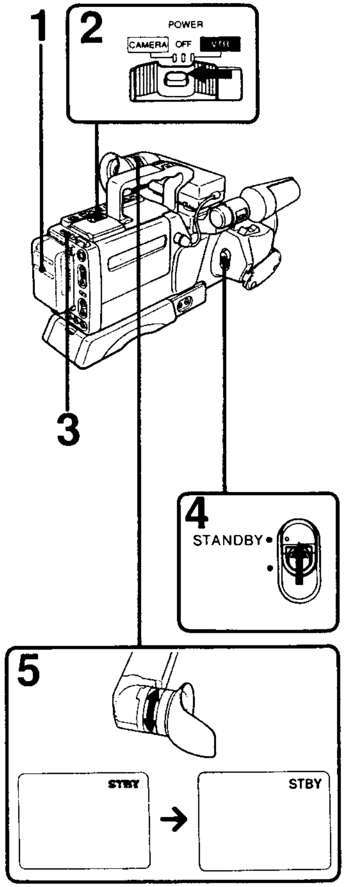
To re-record on the cassette, slide the tab in to uncover the opening.

Recording Mode

The recording time of a cassette in the LP mode is twice as long as that in the SP mode. The quality of the recording picture in the LP mode, however, will not be as good as that in the SP mode.

Notes
- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, or if the tab is out or in, etc.
- To record from the beginning of the tape, run the video camera recorder for about 15 seconds at the beginning of a cassette before recording. It will avoid missing the starting point during playback on a video cassette recorder.
- Store tapes in their cases and keep them in an upright position to prevent intrution of dust and uneven winding.
- Store tapes in their cases and keep them away from heat, humidity, direct sunlight, magnetic fields, dust and mold.

(E-1)



Adjustment of the Viewfinder Lens

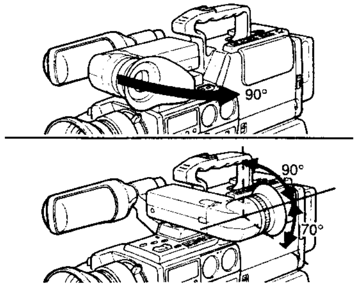
The position of the viewfinder lens for optimum vision varies depending on the person. **(E-1)**

1 Connect a power source.
2 While pressing the small button, set the POWER switch to CAMERA.
3 Insert a cassette.
4 Slide the STANDBY switch up.
5 Turn the viewfinder lens adjustment ring so that the indicator displayed on the viewfinder screen comes into sharp focus.

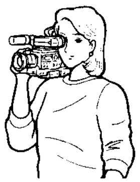
Adjustment of the viewfinder lens is necessary only for your initial use, or for use after someone else.

Note
If you leave the unit in the recording pause mode for 5 minutes or more, the unit will be automatically turned off. To resume recording pause mode, slide the STANDBY switch down once and slide it up again. To start recording, press the START/STOP button.

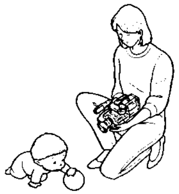
(F-1)



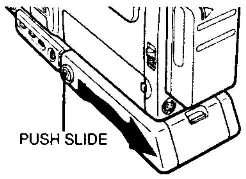
(F-2)



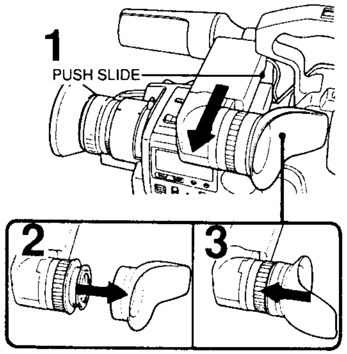
(F-3)



(F-4)



(F-5)



Easy Camera Recording with Automatic Adjustment

Holding the Video Camera Recorder

Setting of the viewfinder (F-1)
Turn the viewfinder until it locks (90 degrees).

To change the angle of the viewfinder
The viewfinder can be turned 90 degrees up and 70 degrees down to make high-angle or low angle shooting possible.

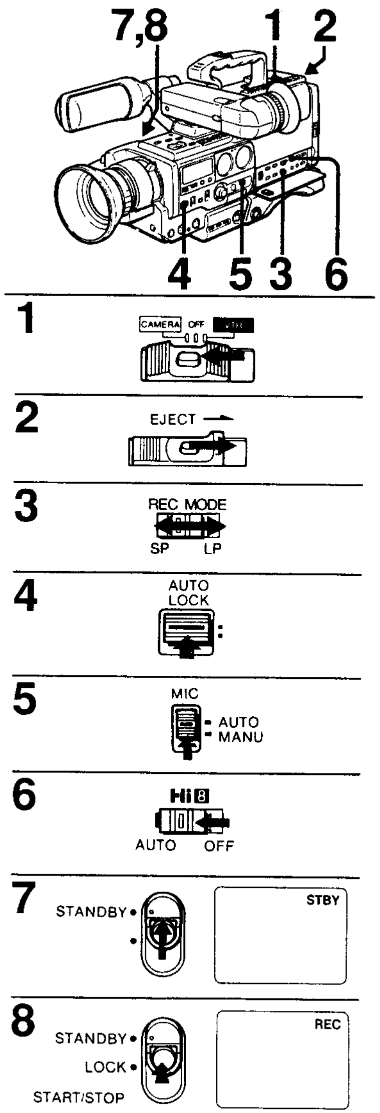
Basic posture for recording (F-2)
Put the video camera recorder on your shoulder and your right elbow firmly against your side.

For low position recording (F-3)
1 Turn up the viewfinder.
2 Press the START/STOP button at the side of the lens.

To adjust the position of the shoulder mount (F-4)
While pressing the PUSH SLIDE button, slide the shoulder mount backward. The shoulder mount can be set to one of two positions.

To view with your left eye (F-5)
1 While pressing the PUSH SLIDE button, slide the viewfinder. The viewfinder can be set to one of two positions.
2 Pull out the rubber eyecup.
3 Turn the eyecup and reattach it.

(F-6)



How to Record

(F-6)

1 While pressing the small button, set the POWER switch to CAMERA.
2 Insert the cassette.
3 Set the REC MODE selector to LP or SP, according to the length of the programme to be recorded.
4 Set the AUTO LOCK switch to AUTO LOCK (green position).
For manual adjustment, see pages 37 to 44.
To adjust the white balance precisely, we recommend the manual white balance adjustment with the white lens cap.
5 Set the MIC switch to AUTO.
6 Set the Hi8 mode switch to AUTO (green mark).
The recording mode is selected automatically.
For Hi 8 video system tape Hi8 : Hi 8 mode recording
For standard 8 mm tape 8 : Normal mode recording
7 Slide the STANDBY switch up.
The unit will enter the recording pause mode.
8 Press the START/STOP button.
Recording will start.

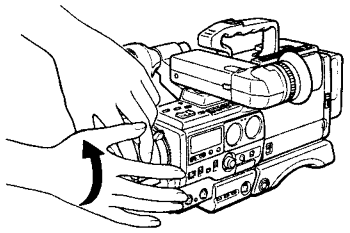
For digital picture recording, see "Viewing digital pictures" on page 61.

Check in the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording
Press the START/STOP button again. The unit will enter the recording pause mode. Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

Note
When the tape for the Hi 8 video system Hi8 is used for normal recording, set the Hi8 mode switch to OFF.

(F-7)



Rec review using EDITSEARCH
Using EDITSEARCH, you can check the last portion of the previous recording. This is convenient for quick, on-the-spot checks.

1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the –⊜ EDITSEARCH button momentarily.
The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

If the picture has not been recorded
The video heads may be contaminated. Clean the heads using the Sony video head cleaning cassette.

After using
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

When attaching the lens hood, filter or conversion lens, hold the focus ring. **(F-7)**

When removing, press it with the palm of your hand and turn it counterclockwise.

Note on power source
If the POWER switch is moved during recording, the tape will stop.

The last portion of the recorded picture appears momentarily when the recording is started.
This is a phenomenon of the overlap operation (page 64).

How to display the RC time code during recording
During camera recording, the RC time code and data code (recording date and time) are automatically recorded on the tape. If you want to display the RC time code in the viewfinder and display window during recording, change the setting of the COUNTER mode to TIME CODE.
To write the RC time code on a prerecorded tape, see page 80.

Note
The data code cannot be displayed during recording.

Brightness Levels

The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

Snow-covered mountains Snow fields Sandy beach, clear day in summer	Unit: lx	ND filter required
Clear day, mid-day (100,000 lux)	100,000	
Clear day, mid-afternoon (35,000) Overcast day, mid-day (32,000)	10,000	Normal Recording
Overcast day, one hour after sunrise (2,000) Office lit by fluorescent lamps, near window (1,000) Clear day, one hour before sunset (1,000) Department store counter (500–700)	1,000	
Station wicket (650) Office lit by fluorescent lamps (400–500)	500	
Room lit by two 30 W fluorescent lamps (300) Subway station platform (300)	300	
Arcade at night (150–200)	100	
Theatre lobby (15–35) Candle light (10–15)	10	Video light recom-mended

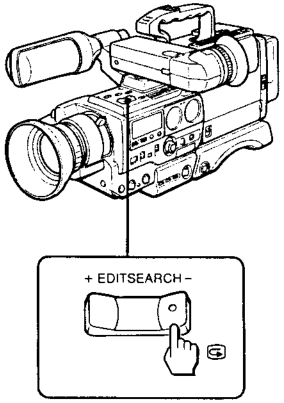
Instant Playback on the Spot

(F-8)

You can monitor the picture just recorded on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Press the "–" side of the EDITSEARCH button to view the playback picture in reverse.
4 Press the "+" side of the EDITSEARCH button to view the playback picture.

(F-8)



To Monitor the Playback Sound

(F-9)

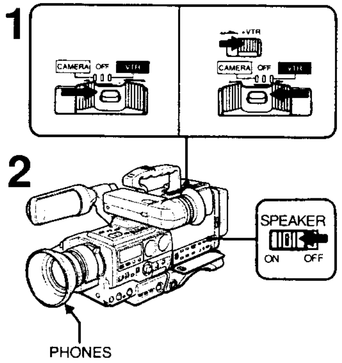
1 While pressing the small button, set the POWER switch to VTR. If the POWER switch is set to CAMERA, set the +VTR switch in the direction of the arrow.
2 Set the SPEAKER switch to ON.
3 Rewind the tape.
4 Playback the tape.

To stop the tape, press the □ button.

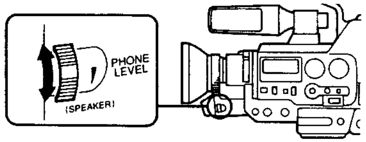
To monitor the sound with the earphone
Connect the earphone to the PHONES jack. When the earphone is connected, even if the SPEAKER switch is set to ON, the sound from the speaker will be turned off.

To adjust the volume of the speaker or earphone (F-10)
Turn the PHONE LEVEL control.
[a] To increase the volume
[b] To decrease the volume

(F-9)



(F-10)



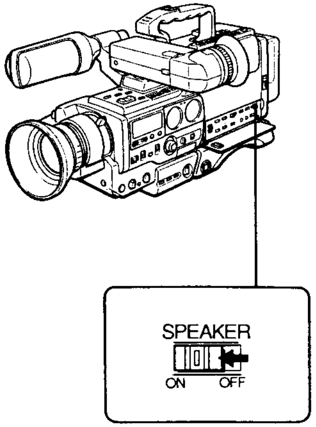
To Monitor the Sound during Recording

(F-11)

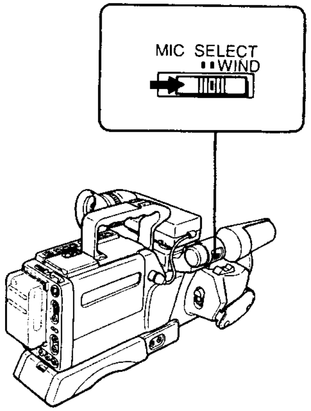
To monitor with the speaker:
Set the SPEAKER switch to ON.
The sound level cannot be adjusted in the recording mode by using the PHONE LEVEL control.

To monitor with the earphone:
Connect the earphone to the PHONES jack on the side of the lens.
When the earphone is connected, the speaker sounds will be turned off. The volume can be adjusted with the PHONE LEVEL control.

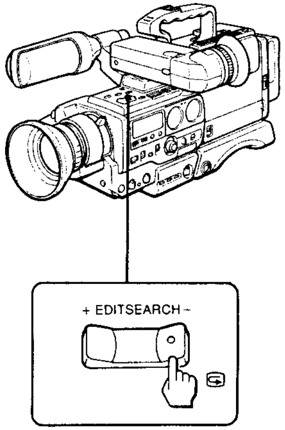
(F-11)



(F-12)



(F-13)



Easy Camera Recording with Automatic Adjustment

To Cut Wind Noise

Set the MIC SELECT switch to WIND to cut the low frequency noise, like wind noise etc.
(F-12)

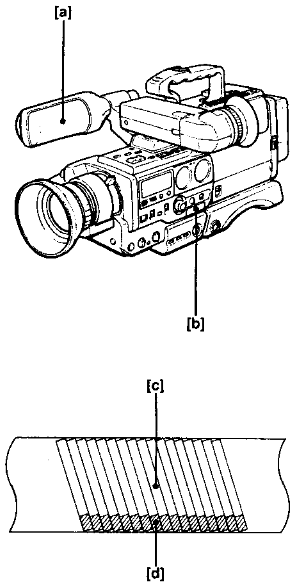
During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1)

(F-13)

1 Slide the STANDBY switch up.
2 Monitor the picture on the viewfinder screen and locate the point from which the recording is to begin again with the EDITSEARCH button. Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "–" side to reverse the picture.
3 At the desired point, release the EDITSEARCH button.
The unit will be set to recording pause mode.
4 Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

(G-1)



Audio Recording

There are two kinds of built-in microphones, one point stereo microphone and narration microphone.
The one point stereo microphone is a uni-directional type. The sharp directivity allows recording of the sound from the subject itself and its surroundings with natural sound quality.
The narration microphone is to be used for telling the event during recording.
The sounds from the one point stereo microphone can be recorded in stereo on the standard track and the PCM track, and the sounds from the narration microphone can be recorded in monaural on the standard track.

An external stereo microphone and external narration microphone can be connected to this unit, also.
For details on the recording tracks where the sounds from each microphone are recorded, see the table below.

When the built-in microphone is used, the audio signal is recorded as follows. (G-1)
[a] One point stereo microphone
[b] Narration microphone
[c] Standard track (hi-fi stereo recording)
[d] PCM track (digital stereo recording)

Sound to be recorded	**Standard track**		**PCM track**	
Microphone to be used	L channel	R channel	L channel	R channel
One point stereo microphone	L sound	R sound	L sound	R sound
When the narration microphone is set to ON.	L sound and narration (monaural)	R sound and narration (monaural)	L sound	R sound

When an external microphone is connected, the audio signal is recorded as follows.
The sound from the external microphone can be recorded in stereo on the standard track and the PCM track. When the built-in narration microphone is used with the external microphone, the sounds from both microphones are mixed on the standard track.

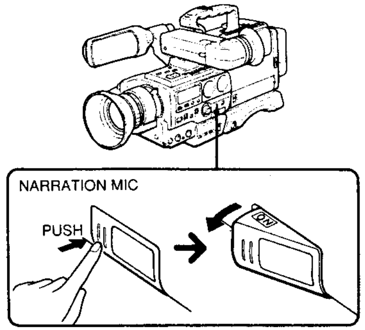
Sound to be recorded	Standard track		PCM track	
Connection	L channel	R channel	L channel	R channel
L and R	external L micro-phone	external R micro-phone	external L micro-phone	external R micro-phone
L	external L micro-phone	external L micro-phone	external L micro-phone	external L micro-phone
R	built-in L micro-phone	external R micro-phone	built-in L micro-phone	external R micro-phone

When the external narration microphone is used
The sound from the external narration microphone can be recorded in monaural on the standard track. The Hi-Fi lamp will be turned off (page 35.)
When the built-in stereo microphone or the external stereo microphone is used with the external narration microphone, the sound from the stereo microphone can be recorded on the PCM track.

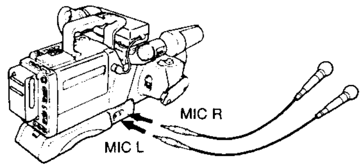
Use of the One Point Stereo Microphone

Normally set the MIC switch to AUTO and the recording level will be adjusted automatically. However, according to the recording condition or subject, more effective recording can be done by manual adjustment. See "Recording level adjustment" on page 35.
When there is strong wind, set the MIC SELECT switch to WIND. The effects of wind noise will be reduced.

(G-2)



(G-3)



Use of the Built-in Narration Microphone

(G-2)

During recording, the narration can be recorded. Press the PUSH mark on the NARRATION MIC. While recording the narration, the sound from the one-point stereo microphone can be recorded on the standard track and the PCM track.
While recording with the POWER switch set to VTR, the narration can be recorded.

After using, push in the microphone.
The narration microphone will be turned off automatically.

Use of an External Stereo Microphone

(G-3)

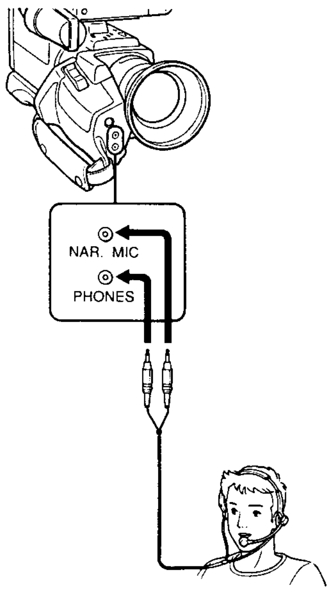
Connection example
Connect each microphone to the MIC L and R jacks.
When one microphone is connected, for the track where the sound from the built-in or external microphone is recorded, see the table on page 31.

Variety of optional microphones
- To pick up specific sounds
  — uni-directional microphone
- To isolate a sound
  — supercardioid microphone
- To allow the field of recording to be changed
  — zoom microphone
- To pick up sounds equally from all directions
  — omni-directional microphone

Adjustment of the recording level
See the "Recording level adjustment" on page 35.

Note
Keep the microphone far away from the TV so that the hum noise does not occur.

(G-4)



Use of an External Narration Microphone

(G-4)

When a stereo headphone equipped with the microphone is used, the narration can be dubbed during monitoring the recording sound.

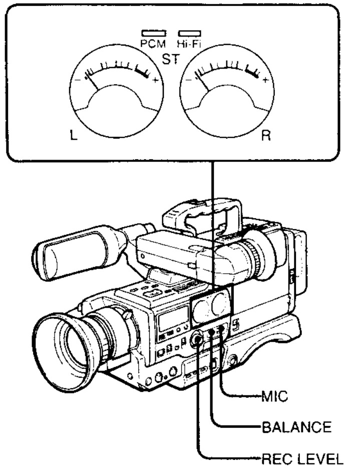
When the external narration microphone is connected

- The built-in narration microphone will not be functioned.
- The sounds from only the external narration microphone can be recorded in monaural on the standard track.

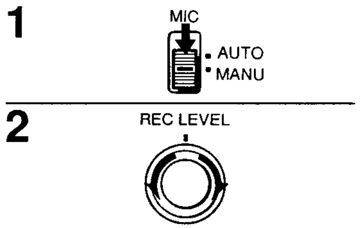
When the sounds are played back by the VTR without the PCM recording or playback function.
The sounds from only the external narration microphone will be played back.

Adjustment of the recording level
See the "Recording level adjustment" on page 35.

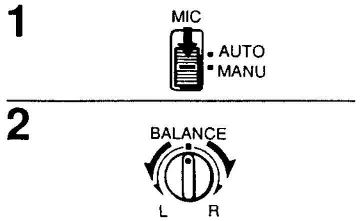
(G-5)



(G-6)



(G-7)



Recording Level Adjustment

When the MIC switch is set to the green (upper) position, the recording level of the microphone will be adjusted automatically. However, for the audio dubbing or the tape editing, the manual adjustment is recommended. **(G-5)**

Volume adjustment

(G-6)

1 Set the MIC switch to MANU.
2 Adjust the volume.
Turn the REC LEVEL control so that the meter sometimes enter into the red zone.

Balance adjustment

(G-7)

1 Set the MIC switch to MANU.
2 Turn the BALANCE control to adjust the balance.
To increase the volume of the right channel
— Turn towards the R side.
To increase the volume of the left channel
— Turn towards the L side.

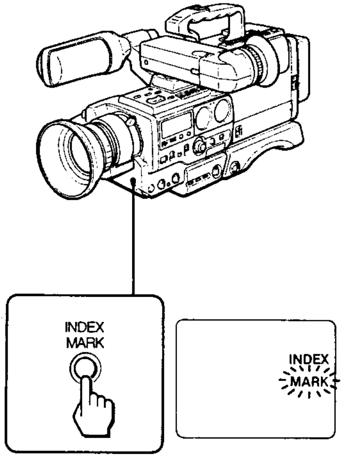
Order of the adjustments

First adjust the volume and then balance.

Reading the level meter

- If the meter frequently swings into the red zone, the recorded sound is distorted.
- If the meter hardly swings at the left position, recording will be noisy.

(G-8)



To Mark Index Signals during Recording

The desired programme can be easily located by an index signal marked on the tape.
Press the INDEX MARK button at any desired point on the tape during camera recording.
(G-8)

When the index signal is marked in the recording pause mode (the MARK indication flashes), the index signal will be marked just after the recording pause mode is released.

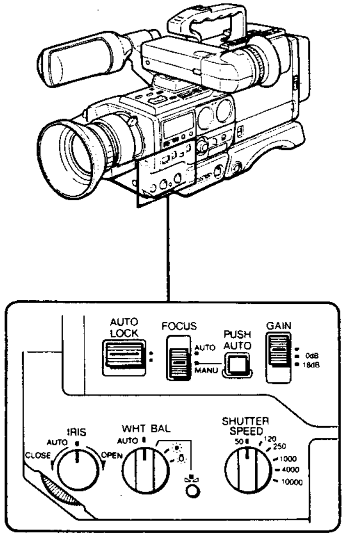
For other index operations, see page 75.

Notes

- The index signals can be marked at any desired point. But make sure there is more than 2 minutes of space between two index signals. If there is more than one index signal marked within an interval of 2 minutes on a normal tape run, the unit may not function properly.
- The INDEX MARK indication disappears automatically.
  Continue to record until the INDEX MARK disappears so that the recorded index signal can be searched correctly in the playback mode.

When the POWER switch is set to VTR, the index signal can also be marked during recording.
If the REC switch is pressed to start recording in the stop mode, an index signal will be automatically marked at the beginning of the tape.

(H-1)



Selection of the Automatic and Manual Adjustments

Function of the AUTO LOCK Switch

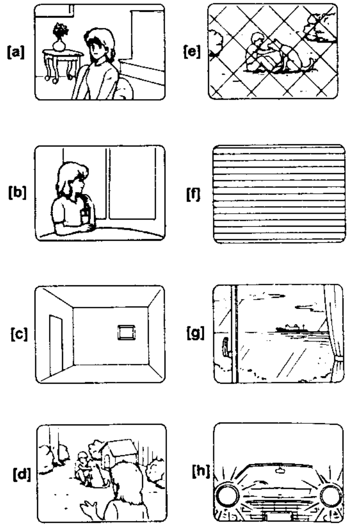
When the AUTO LOCK switch is set to AUTO LOCK (green mark), the iris, focus, white balance, gain level and shutter speed (1/50) are adjusted automatically. But under certain circumstances, such as the white balance adjustment, manual adjustment is better for effective recording. **(H-1)**

When the AUTO LOCK switch is set to the lower position (white mark), each manual function works as follows.

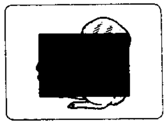
FOCUS See page 38.	For manual focusing, set to MANU.
PUSH AUTO See page 40.	When this button is kept depressed, auto focusing activates in the manual focusing mode.
WHT BAL. See page 41.	According to the condition in which the recorder is used, set to • or ☼.
■ **WHT BAL** See page 42.	When the WHT BAL is set to ■ and the ■ button is pressed, the white balance is adjusted manually.
GAIN See page 43.	Set to 0 dB or 18 dB to adjust the gain level.
IRIS See page 43.	• When the shooting subject is too dark, turn to OPEN. • When the shooting subject is too bright, turn to CLOSE.
SHUTTER SPEED See page 44.	Set this according to the shooting subject.

Even if the AUTO LOCK switch is set to the lower position, if each control is set to AUTO, its auto function will work. It is convenient to use some functions in manual mode and others in automatic mode.

(H-2)



(H-3)



Manual Focusing

Use manual focusing when shooting subjects difficult to focus automatically.

Poor Conditions for Auto Focusing

(H-2)

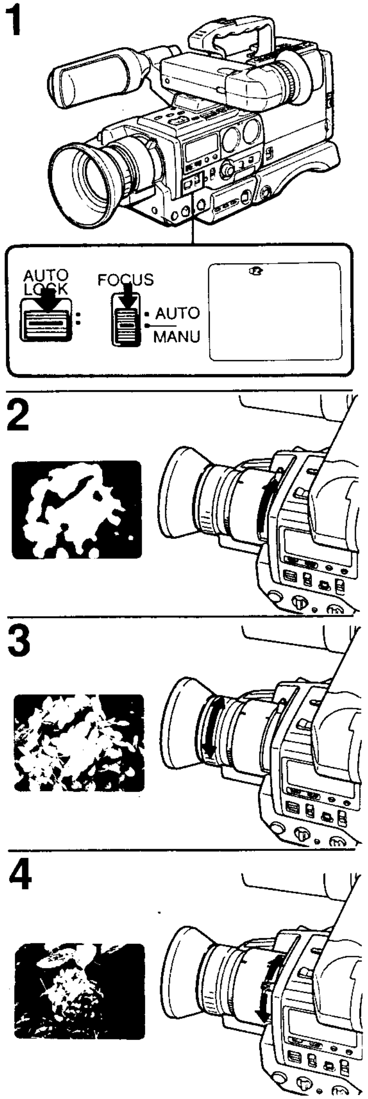
[a] Insufficient light
[b] Too much bright light behind the subject
[c] Subjects with flat colours and less contrast – wall, sky, etc.
[d] When the distance between subjects at the center is extreme (e.g. one subject is close, the other is away)
[e] Subjects beyond screens, nets, etc. or when another subject passes across the camera
[f] Horizontal stripes
[g] When there is frosted glass between the shooting object and the recorder
[h] Bright object or object reflecting light

Other Uses of Manual Focusing

- When the ☞ mark inside the viewfinder flashes
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 46.

Auto focusing system
The auto focusing system incorporated in this unit utilizes high-precision sensors to determine picture contrast at the centre of the viewfinder screen (the blue portion marked in the illustration) and adjust focus accordingly for automatic, highly accurate focusing. **(H-3)**

(H-4)



Manual Focusing

Notes
Auto focus does not function momentarily in these cases;

- When the shutter speed or the white balance is changed
- When the iris is being adjusted
- When lighting conditions change quickly
- When the zooming is changed from wide-angle to telephoto
- When the gain level is changed.

It may take several seconds to get focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

Note on automatic adjustment
While recording with the auto focusing function, do not touch the focus ring forcibly.

To Focus Manually

(H-4)

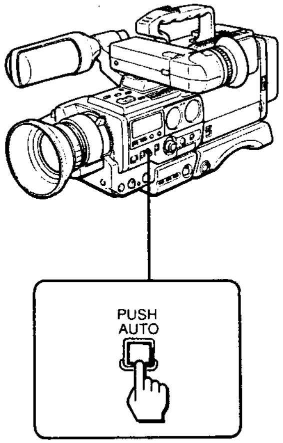
1. Set the AUTO LOCK switch to the lower position and set the FOCUS switch to MANU. The ☞ mark will be shown in the viewfinder.
2. Turn the manual zoom lever to the telephoto position (80) to make the subject as large as possible in the viewfinder.
3. Turn the focus ring to achieve sharp focus.
4. Set the desired shot length using the manual zoom lever.

Some helpful hints

- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the φ mark on the recorder.

When the wired commander not supplied is used
The focus adjustment cannot be set to auto or manual with the commander.

(H-5)

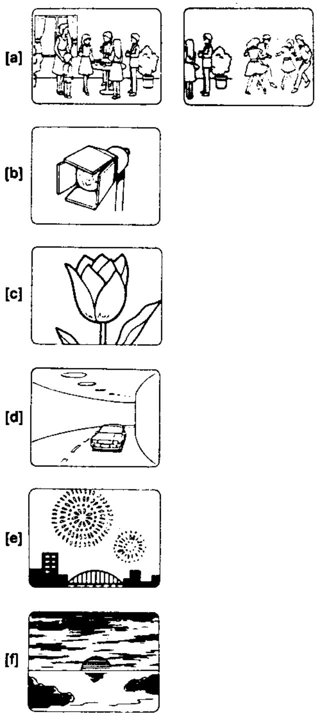


Quick Focus Adjustment

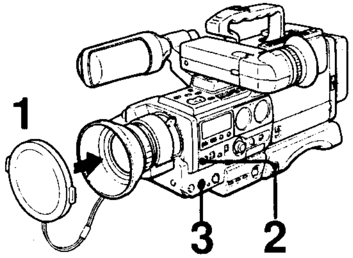
(H-5)

Press the PUSH AUTO button during recording in the manual focusing mode. Auto focusing will be activated only when the PUSH AUTO button is kept depressed.

(H-6)



(H-7)



Manual White Balance Adjustment

The auto white balance function of this unit operates automatically.
However, to record the colour of the subject more correctly so that it is not affected by the colour temperature of the ambient light, adjust the white balance manually using the white lens cap.

Difficult Conditions for Auto White Balance

(H-6)

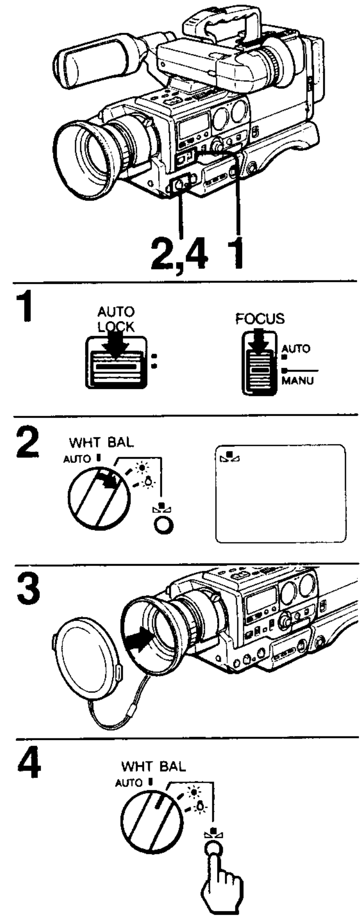
[a]	When lighting conditions change quickly	💡
[b]	When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc.	💡
[c]	When shooting a monochromatic subject or the background is monochromatic	■
[d]	• When recording under a sodium lamp • When recording under a mercury lamp	💡
	• When recording under a white fluorescent lamp	☀
[e]	When recording outdoors, such as a night view, neon sign or fireworks	☀
[f]	When recording outdoors, such as scenes after sunset or scenes before sunrise.	☀

To Adjust the White Balance Manually

(H-7)

1 Attach the white lens cap.
2 Set the AUTO LOCK switch to the lower position.
3 Set the WHT BAL control to the desired position.

(H-8)



Manual White Balance Adjustment

To adjust the White Balance Precisely

After setting the white balance with the ▣ button according to the subject, even if the light source is changed, the adjustment is held. It is convenient to record some subjects in the different light conditions in the same white balance setting.
(H-8)

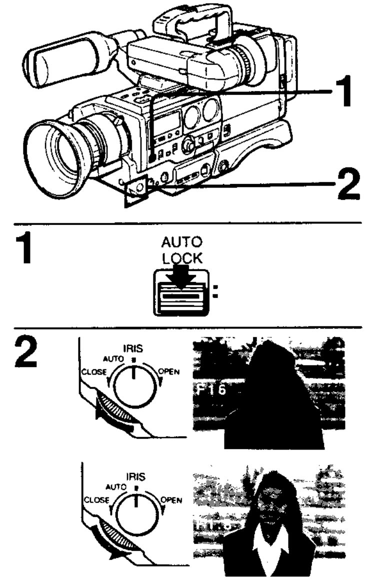
1 Set the AUTO LOCK switch to the lower position, FOCUS switch to MANU and adjust the focus manually.
2 Set the WHT BAL control to ▣.
The ▣ indication will appear inside the viewfinder.
3 Attach the white lens cap to the recorder and point the recorder at a subject (outdoors) or a light source (indoors).
4 After starting recording, press the ▣ button.
The ▣ indication will light up.
The adjustment is memorized for 1 hour even after the POWER switch is set to OFF.

When recording in studio light or video light
Set the WHT BAL control to ☼. The ☼ mark position has been set so as to adjust the white balance according to studio lights or video lights.

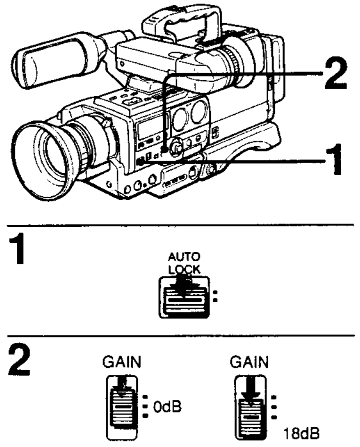
When recording in fluorescent light
Use the AUTO mode to adjust the white balance precisely.

Notes
- When the light source is changed, reset the ▣ mode again.
- When the one push white balance is adjusted for low light situations or without the white lens cap on the lens, even if the ▣ button is pressed, the ▣ indicator does not light up.
- The white balance is related to iris and shutter speed adjustment. When the iris or shutter speed is adjusted manually, if the recorder is moved indoor to outdoor or vice versa, set the AUTO LOCK switch to AUTO LOCK and reset it to the lower position again.
- When the recorder has been moved indoor to outdoor, or vice versa, or when the battery has been changed, slide the STANDBY switch up and point the recorder to a white object for about 10 seconds so that the white balance is adjusted properly.

(H-9)



(H-10)



Manual Iris Adjustment

The iris is adjusted automatically when the AUTO LOCK switch is set to AUTO LOCK (green position). When shooting a scene with strong contrast, adjust the iris manually.
(H-9)

1 Set the **AUTO LOCK** switch to the lower position (white mark).
2 Adjust the IRIS control.
  [a] When backlit shot results in the subject being too dark:
  Turn IRIS toward OPEN.
  [b] When a subject is too bright against a dark background:
  Turn IRIS toward CLOSE.

After shooting that particular scene, set the IRIS control to the center position (green mark) or set the AUTO LOCK switch to AUTO LOCK.

Note
Avoid pointing the recorder at the sun with the IRIS control set to OPEN.

Manual Gain Level Adjustment

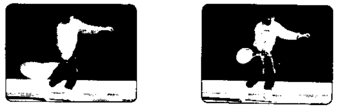
When the entire scene is too dark and the subject is not clear, adjust the gain level. **(H-10)**

1 Set the AUTO LOCK switch to the lower position (white mark).
2 Set the GAIN switch to 0dB or 18dB.
  [a] dark
  [b] too dark

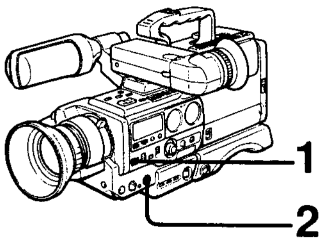
After shooting that particular scene, set the GAIN switch to the upper position(green) or set the AUTO LOCK switch to AUTO LOCK.

About gain level adjustment
- The effect of this function will be obtained only when the scene is dark.
- When the GAIN switch is set to 0 dB or 18 dB, the picture may show poor definition.

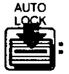
(H-11)



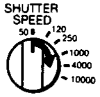
(H-12)



1



2



Shutter Speed Adjustment

When a fast-moving subject is recorded at a normal shutter speed, its still picture may not be seen clearly when played back **(H-11)**. This can be improved by increasing the shutter speed.
The shutter speed of this unit can be selected from six speeds, 1/50 (normal speed), 1/120, 1/250, 1/1000, 1/4000 or 1/10000 second.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

Example use	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000 or 1/10000) • Recording the skiers	1/10000 or 1/4000
• On overcast days, recording a moving merry-go-round or jet-coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/1000 or 1/250
• Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) • Recording indoors (for stable shooting)	1/120

(H-12)

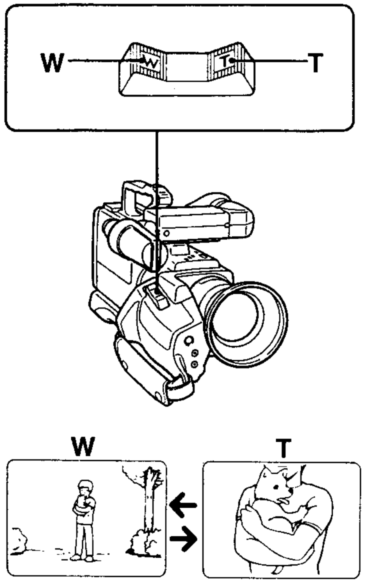
1 Set the AUTO LOCK switch to the lower position.
2 Set the SHUTTER SPEED control to the desired shutter speed.

No indication (1/50) → 120 (1/120) → 250 (1/250) → 1000 (1/1000) → 4000 (1/4000) → 10000 (1/10000) ↑

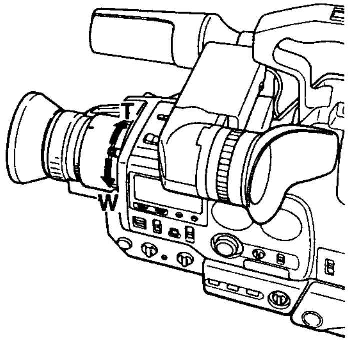
Notes

- When shutter speed 1/250 or faster is selected, recording must be done under sunlight or video light.
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.

(I-1)



(I-2)



Zooming

The size of the subject in the scene can be changed.

Power Zoom

(I-1)

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle. The zoom ring will move automatically.

The zooming speed is faster when the power zoom button is pressed firmly, and slower when the button is pressed lightly.

Note on use of the Commander
During the fast-forward or rewinding, the power zoom button on the Commander will not function.

Manual Zoom

(I-2)

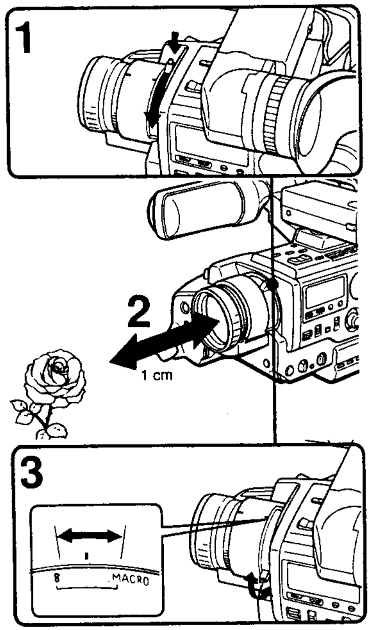
— to create a dramatic effect

Turn the manual zoom lever upward for telephoto and downward for wide-angle.

For more zooming effect

- The focal length of this unit is 8 mm to 80 mm. Converted into the focal length of a 35 mm camera, this means approximately f-43 mm to 430 mm.
- The zooming speed cannot be changed by the supplied Remote Commander.

(I-3)



Close-ups (Macro)

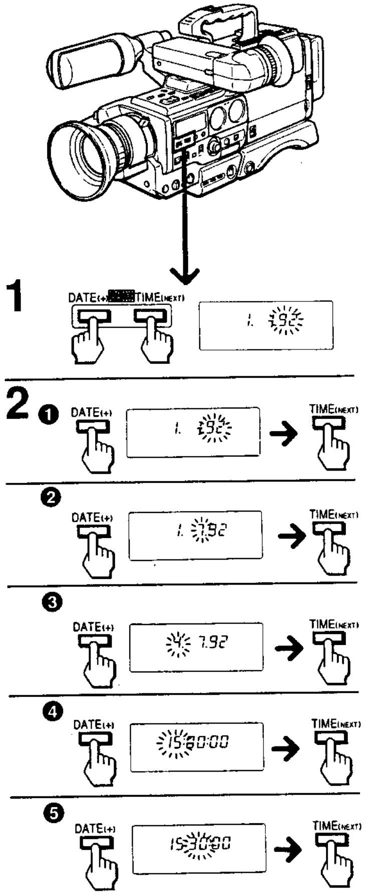
Even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

(I-3)

1 Turn the zoom lever to the MACRO position, pressing the macro set button.
2 Bring the recorder as close as necessary to obtain the desired subject size.
The subject can be as close as approximately 1 cm ($^{13}/_{32}$ in.) from the lens surface.
3 Turn the zoom lever within the MACRO range to focus sharply.

Notes
- Auto focusing does not function in macro shooting.
- If the subject is closer than 1 cm, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.

(I-4)



Recording Date and Time

Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

Before setting the date and time, make sure that the fully-charged battery pack and lithium battery are installed.

To Set Date and Time

(I-4)

- Make sure that the POWER switch is set to OFF or CAMERA.

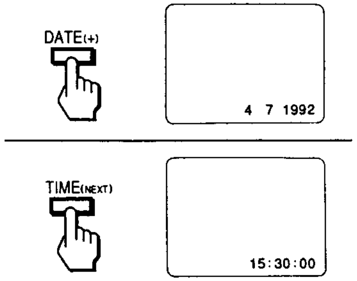
1 Press the DATE and TIME buttons simultaneously **for more than 1.5 seconds**.
The date indication will appear in the display window (date/time setting mode). The DATE button now functions as the + button and the TIME button functions as the NEXT button.
2 Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration.
First adjust the blinking digits with the DATE button, and then press the TIME button.
After adjusting the minute digits, press the TIME button, at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME button again.

The DATE button can be pressed in two ways
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

(I-5)



Recording Date and Time

To check the preset date or time
Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

To readjust an incorrect date or time
Set the unit to date/time setting mode and press the TIME button repeatedly until the incorrect digit flashes. Correct it with the DATE button and press the TIME button. After adjusting the minute digits, press the TIME button at the same time with an announced time signal.

Note
The date and time cannot be set during recording.
If the recorder is set to the recording mode while setting the date and time, the setting mode will be released.

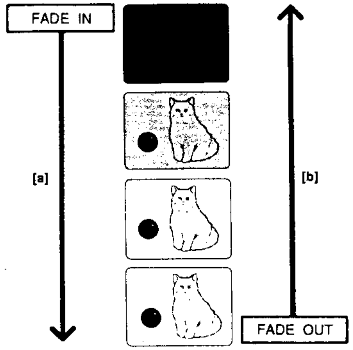
To Record the Date or Time

(I-5)

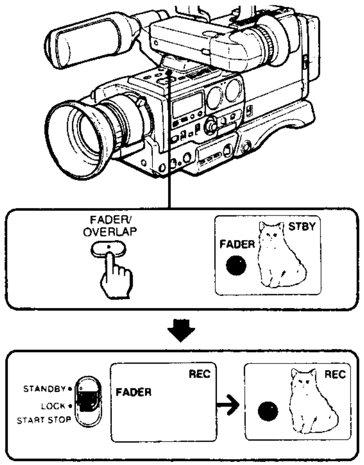
During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen.
The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME button again. The picture recording will continue.

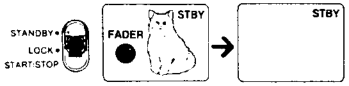
(I-6)



(I-7)



(I-8)



Fade-in and Fade-out

(I-6)

When fade-in, the picture and sound will appear gradually from a black, silent screen. **[a]**
With fade-out, the picture and sound will disappear gradually. **[b]**
Dramatic effects can be added by using fade-in at the beginning of a recording and fade-out at the end.

To Fade in

(I-7)

1. Slide the STANDBY switch up to set the unit to recording pause mode.
2. Press the FADER/OVERLAP button once.
3. Press START/STOP button to start camera recording.
   Fade-in will be performed.

To Fade out

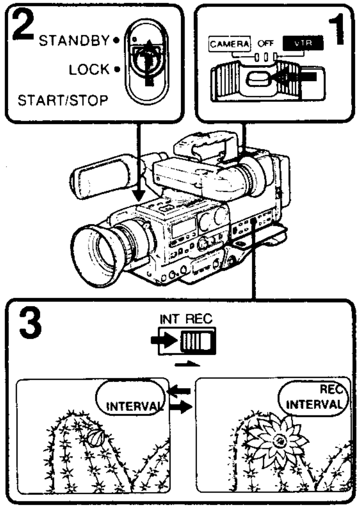
(I-8)

1. Start camera recording.
2. Press the FADER/OVERLAP button once.
3. At the point where fade-out is to be started, press the START/STOP button.
   Fade-out will be performed and then recording will stop.

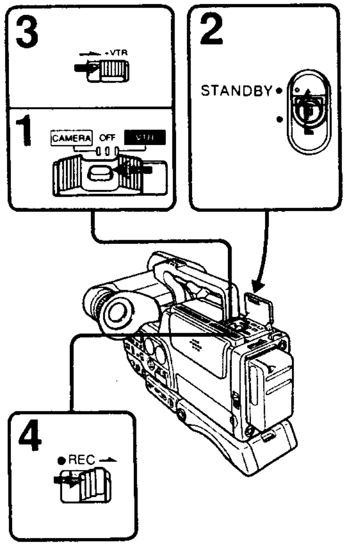
To cancel FADER mode before fade-in or fade-out
Press the FADER/OVERLAP button twice so that the FADER indication disappears.

Notes
- The FADER/OVERLAP button will function while the STBY or REC indication lights. When the +VTR button is set in the direction of the arrow, the FADER/OVERLAP button will not function in the stop mode.
- The FADER mode is cancelled automatically once fade-in or fade-out has been performed.
- The fader function cannot work for the sounds from the built-in or external narration microphone.

(I-9)



(I-10)



Interval Recording

A recording of one second will be activated repeatedly at one minute intervals. This is convenient for recording changes such as a flower developing from bud to flower or on insect growing wings. **(I-9)**

1 While pressing the small button, set the POWER switch to CAMERA.
2 Set the video camera recorder to the recording pause mode.
3 Slide the INT REC button in the direction of the arrow. The interval recording will be started and the "STBY INTERVAL" will be displayed.
4 Slide the INT REC button in the direction of the arrow to stop the interval recording.

- For interval recording, signals from the VIDEO/ AUDIO input jacks can be recorded. Set the POWER switch to VTR.

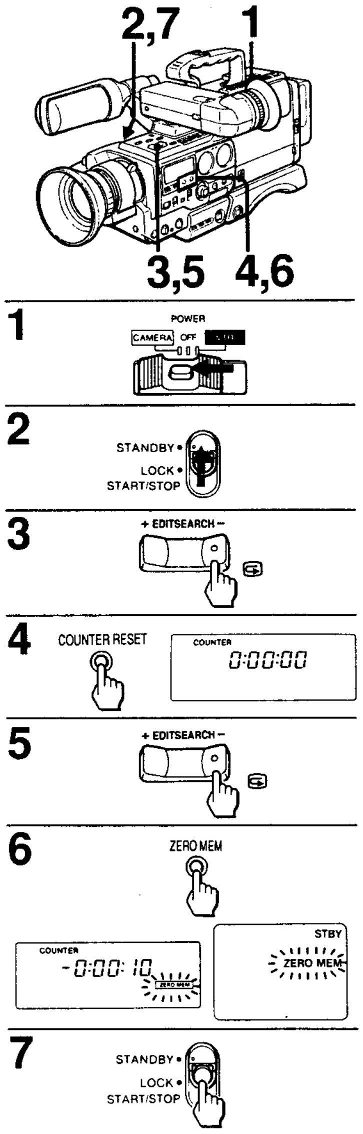
Frame Recording

A recording of six frames can be activated manually for creating an animated programme of your own. **(I-10)**

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Set the +VTR switch in the direction of the arrow.
4 Slide the ●REC switch in the direction of the arrow.
A recording of six frames will be made and the recording pause mode will resume.
5 Move the subject a little and repeat step 4 as many times as you like.

- For frame recording, signals from the VIDEO/ AUDIO input jacks can be recorded. Set the POWER switch to VTR.
- After completing the frame recording, be sure to set the +VTR switch in the opposite direction of the arrow.

(I-11)



Editsearch

You can insert (record) video and audio simultaneously from the camera onto any recorded tape.

Operation

(I-11)

- Monitor the picture being inserted on the viewfinder screen.
- Select the same tape speed as was used for already recorded portion with the REC MODE selector.
- Make sure that the +VTR switch is set to the opposite direction of the arrow.
- Make sure that the COUNTER mode select switch is set to NORMAL.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "–" side of the EDITSEARCH button and release the button at the point where the insert should **end**. The unit will be set to recording pause mode.
4 Display the counter in the display window and press the COUNTER RESET button. The counter is reset to zero. (For an accurate ending point, press the COUNTER RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "–" side of the EDITSEARCH button and release the button at the point where the insert should **begin**.
6 Press the ZERO MEM button.
The insert ending point is stored in memory.
7 Press the START/STOP button.
Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To change the insert ending point
Press the ZERO MEM button to turn off the ZERO MEM indicator and repeat steps 3 through 6 above.

To insert the date or time
Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

When the battery is removed with the STANDBY switch slid up
Smooth recording cannot be made and overlap operation may not function correctly. For smooth recording or overlap operation, search the point where the insert should begin with the EDITSEARCH button and then start recording or overlap operation.

Notes on ZERO MEM mode
ZERO MEM mode is cancelled automatically in the following cases.

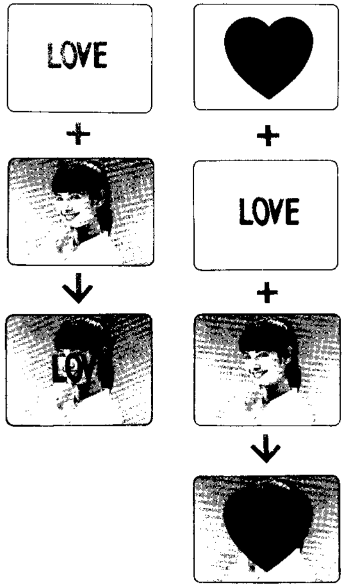
- When an insert recording is completed.
- When the position of the POWER switch is changed.
- When the position of the COUNTER mode select switch is changed.
- When the power is turned off.
- When the cassette is ejected.

To restore it, press the ZERO MEM button again.

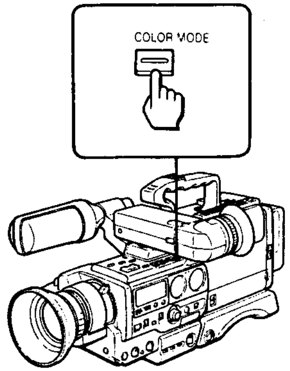
Notes

- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be turned off.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted programme.

(J-1)



(J-2)



Recording a Title

Before recording, store a title or figure. The stored title or figure is superimposed onto the picture being recorded. **(J-1)**

- Two kinds of titles or figures can be stored.
- The colour of the title or figure can be selected from 8 colours.

Make sure that the lithium battery is installed. See page 22.

Preparations

To make a desired title card

- Use a white and plane card and draw the title on it with a deep colour (black is recommended for the best result) in thick letters.
  If contrast is clear, a signboard can be stored like the title card.
- When deciding the title size, check the effective picture size on your video monitor.

Before storing a title

- Fix the title card and the video camera recorder.
- Use of an appropriate light is recommended for a better result.

Function of the COLOR/MODE button

This button is used to select the title colour or title mode. **(J-2)**

To select the colour

1. Press the TITLE 1 or TITLE 2 button to display the title.
2. Press COLOR/MODE.
   Each time the button is pressed, the colour indication changes as follows.

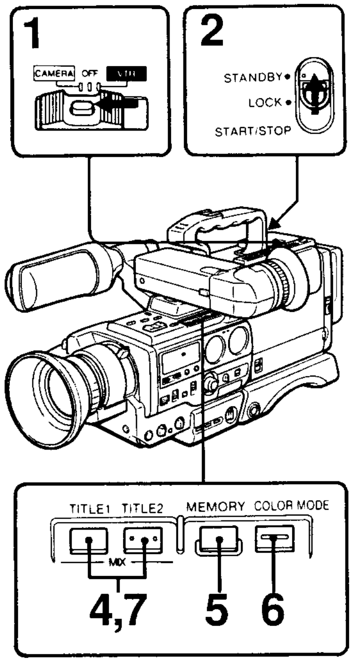
WHT (white) → BLUE → GRN (green) → CYAN ↓
↑
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

To select the title mode

1. If the title is displayed, press the TITLE 1 or TITLE 2 button to clear the title.
2. Press COLOR/MODE.
   Each time the button is pressed, the mode indication in the viewfinder changes as follows.

↑: Scroll up the title.
↓: Scroll down the title.
◘: Reverse the title.
◘↑: Reverse the title and scroll it up.
◘↓: Reverse the title and scroll it down.

(J-3)



To Store the Title

(J-3)

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide up the STANDBY switch to set the unit in the recording pause mode.
3 Point the camera to the title card and adjust the focus.
4 Press the TITLE 1 or 2 button.
5 Press the MEMORY button to memorize the title.
6 Select the title colour while observing the colour indication in the viewfinder. Each push of the COLOR/MODE button cyclically changes the colour, as follows:

WHT (white) → BLUE → GRN (green) → CYAN ↓
↑
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

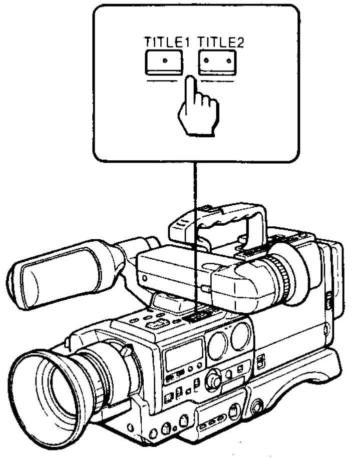
7 Press the TITLE 1 or 2 button (pressed in step 4) to turn off the title.

Notes
- The colour indication in the viewfinder is not recorded on the tapes.
- You can change the title colour even after starting the recording.

To check the title
To check the memorized title, press the TITLE 1 or 2 button. To turn off the title, press the button again.

To store a new title to the TITLE 1 or TITLE 2 button
Repeat steps 1 to 7. A new title is stored and the previous title will be deleted from that button.

(J-4)



To Record One Title

(J-4)

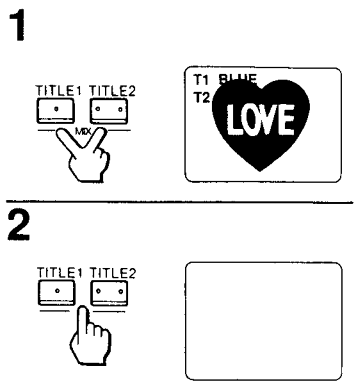
1 During recording, press the TITLE 1 or 2 button at the point from which you want to use the title.
The title is displayed and the title will recorded onto the tape.
2 Press the same button pressed in step 1 at the point you wish to clear the title.

When recording the title at the beginning
We recommend the following method:

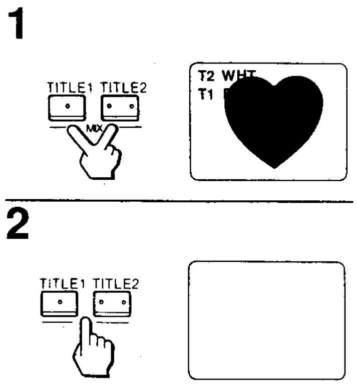
1 Set the camcorder in the standby mode.
2 Display the title referring to step 1 above.
3 Release the standby mode.
4 Clear the title referring to step 2 above.

Note
When storing a title in the memory
When a cassette is installed, the camcorder will return to the power off mode after 5 minutes. Take out the cassette if more than 5 minutes will be needed to store the title.

(J-5)


1
TITLE1 TITLE2
MIX
T1 BLUE
T2
LOVE
2
TITLE1 TITLE2

(J-6)


1
TITLE1 TITLE2
MIX
T2 WHT
T1
2
TITLE1 TITLE2

To Layer One Title Over the Other

The title stored in the TITLE 1 button and the TITLE 2 button can be recorded at the same time with one title layered on the other.

Example: When a blue heart is stored in the TITLE 1 button and a white title "LOVE" is stored in the TITLE 2 button.

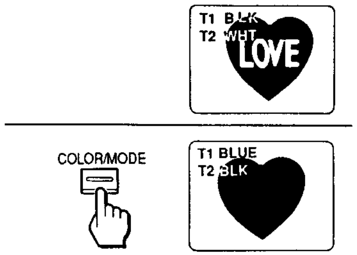
To display TITLE 1 in the background and TITLE 2 in the foreground
(J-5)

1 During recording, hold down the TITLE 1 button and press the TITLE 2 button.
2 Press the TITLE 1 or TITLE 2 button at the point you wish to clear the title.

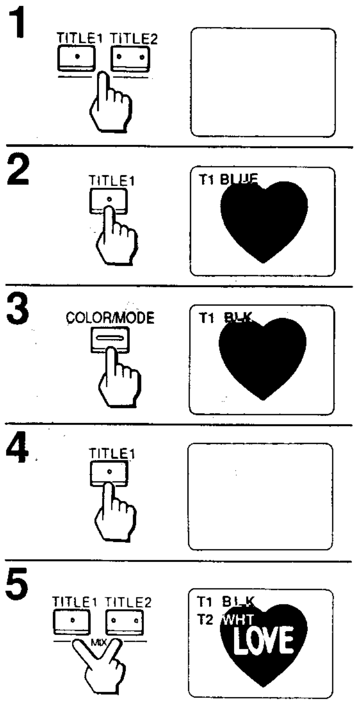
To record TITLE 2 in the background and TITLE 1 in the foreground
(J-6)

1 During recording, hold down the TITLE 2 button and press the TITLE 1 button.
In this case, TITLE 2 "LOVE" is hidden behind TITLE 1 and is not shown. Before using this function, check whether the title stored in the memory is appropriate for this application.
2 Press the TITLE 1 or TITLE 2 button at the point you wish to clear the title.

(J-7)


T1 BLK
T2 WHT
LOVE
COLOR/MODE
T1 BLUE
T2 BLK

(J-8)


1
TITLE1 TITLE2
2
TITLE1
T1 BLUE
3
COLOR/MODE
T1 BLK
4
TITLE1
5
TITLE1 TITLE2
MIX
T1 BLK
T2 WHT
LOVE

To Change the Colour of the Title after Layering One Title over the Other

Example: When a blue heart is stored in the TITLE 1 button and a white title "LOVE" is stored in the TITLE 2 button.

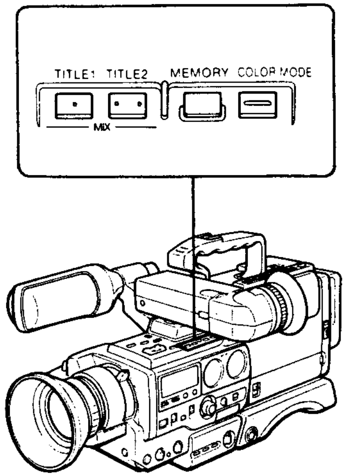
To change the colour of the title in the foreground
(J-7)

Press the COLOR/MODE button
Each press of COLOR/MODE will change the colour of "LOVE".

To change the colour of the title in the background
(J-8)

1 Press the TITLE 1 or TITLE 2 button to clear the title.
2 Press the TITLE 1 button.
TITLE 1, blue heart is displayed.
3 Press the COLOR/MODE button to change the colour of TITLE 1.
The colour of TITLE 1, blue heart, changes.
4 Press the TITLE 1 button.
TITLE 1, black heart, is cleared from the picture frame.
5 Hold down the TITLE 1 button and press the TITLE 2 button.

(J-9)



Various Title Display Modes

Follow the steps below to enjoy the various title display modes.

(J-9)

Step 1
During camera recording , press the COLOR/ MODE button to select the title modes. Refer to the following page for the available modes.

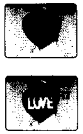
Step 2
Call up the title.

To display one title:
Press the TITLE 1 or TITLE 2 button.
To layer one title over the other:
Call up the title referring to page 56.

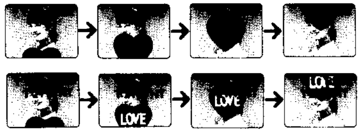
Step 3
Clear the title.

When one title is displayed:
Press the same button pressed in step 2.
When one title is layered over the other:
Press the TITLE 1 or TITLE 2 button.

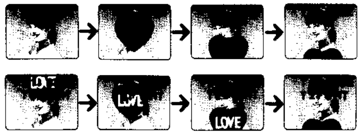
(J-10)



(J-11)

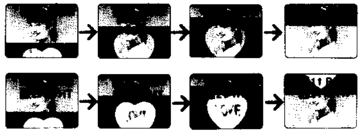


(J-12)

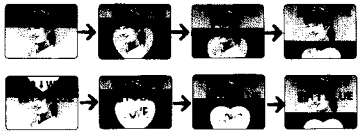


(J-13)

(J-14)



(J-15)



Title modes
Each press of the COLOR/MODE button in step 1 changes the title modes in the following order.

- **Normal title display (J-10)**

- **Scrolling up the title (J-11)**

Step 1: The ↑ indication is displayed.
Step 2: The title is scrolled upwards to the centre and stops.
Step 3: The title is scrolled up and out of the picture frame.

- **Scrolling down the title (J-12)**

Step 1: The ↓ indication is displayed.
Step 2: The title is scrolled downwards to the centre and stops.
Step 3: The title is scrolled down and out of the picture frame.

- **Reversing the title with the picture (J-13)**

Step 1: The ◘ indication is displayed.
Step 2: The reversed title is displayed.
Step 3: The title is cleared from the picture frame.

- **Scrolling up the reversed title (J-14)**

Step 1: The ◘↑ indication is displayed.
Step 2: The reversed title is scrolled upwards to the centre.
Step 3: The reversed title is scrolled up and out of the picture frame.

- **Scrolling down the reversed title (J-15)**

Step 1: The ◘↓ indication is displayed.
Step 2: The reversed title is scrolled downwards to the centre.
Step 3: The reversed title is scrolled down and out of the picture frame.

To scroll up or down through the picture frame
Press the TITLE 1 or TITLE 2 button twice successively. The title does not stop on the centre, but is scrolled up or down and out of the picture frame.

When recording one title over the other

- TITLE 1 and TITLE 2 cannot be called up in the different title mode at the same time. For example, calling up TITLE 1 in the reverse mode and TITLE 2 in the scroll up mode at the same time is not possible.
- When scrolling the two titles layered, press the second title button before the first title starts to scroll.

Notes on scrolling

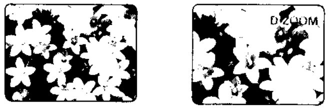
- You can scroll the title only when the camcorder is in the recording standby or recording mode. Only normal title display mode (no indication) and reverse title display mode (■) can be performed during modes other than the two above. (Refer to "Playback" on page 72)
- If you can select the scroll mode first, and then set the camcorder to the modes other than the two above, the scroll mode will be cancelled automatically.

(K-1)

[a]

[b]

[c]



[d]

[e]

[f]

Digital Picture Operation

Viewing Digital Pictures

The digital picture function performs digital image processing of the recording or playback pictures and displays them on the screen with various effects.

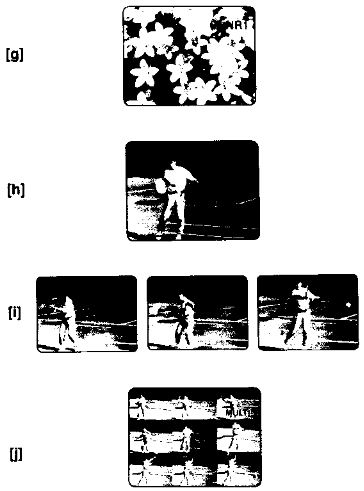
Digital Pictures Viewed with this Unit

(K-1)

Display Page	Digital picture name	Operation		Page
		at camera recording	at playback	
[a]	**Digital still picture superimpose** A desired shaped picture can be recorded in the desired portion of the still picture.	Yes	No	(63)
[b]	**Overlap** The new scene appears and is recorded gradually on the last recorded scene.	Yes	No	(64)
[c]	**Digital zoom** The center portion of the picture is zoomed up twice.	Yes	Yes	(65)
[d]	**Picture in still** a small picture is displayed in the lower right position of the still picture and a new scene can be recorded there or the playback picture can be viewed.	Yes	Yes	(66)
[e]	**Strobe** The moving white object is viewed with the after-image.	Yes	Yes	(67)
[f]	**Solarization** A picture with a solarization effect can be viewed.	Yes	Yes	(67)

to be continued

(K-2)



(K-2)

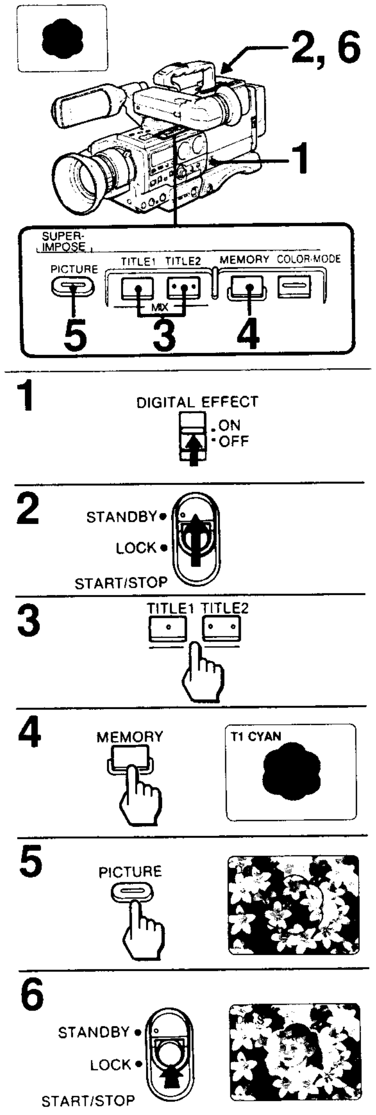
Display	Digital picture name	Operation		Page
		at camera recording	at playback	
[g]	**Noise reduction** A picture with noise reduced can be viewed.	Yes	Yes	(67)
[h]	**Stop motion** A still picture can be viewed.	Yes	Yes	(68)
[i]	**Flash motion** The picture freezes, and after a given period of time the next still picture can be viewed.	Yes	Yes	(68)
[j]	**Multi-picture** 9 frame pictures can be viewed. A still picture appears up to 8 frames successively at specific intervals and the normal playback or recording is continued on the last section.	Yes	Yes	(68)

Using with the title operation
During the digital picture operation, the memorized title will be superimposed by pressing the TITLE (1 or 2) button.

Note on the digital picture
The colour may vary.

Note on DIGITAL EFFECT switch
During recording, do not change the sending of the DIGITAL EFFECT switch. The switch will not function.

(K-3)



To Record a New Scene or View the Playback Picture in the Small Picture in the Still Picture

— Digital Still Picture superimpose

The function can be operated at camera recording (At playback, it cannot be operated.)

Before operation, draw the shape of the portion in which the picture is recorded (pattern) with a deep colour in thick letters. (See "To make a desired title card" on page 53.) **(K-3)**

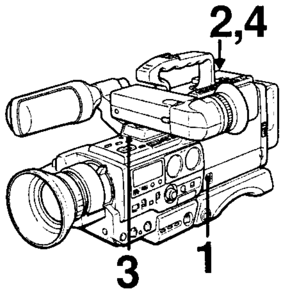
1 Set the DIGITAL EFFECT switch to ON.
2 Set the recorder in the recording pause mode.
3 Press the TITLE 1 (or 2) button.
4 Memorize the pattern.
5 Point the recorder to the subject for the still picture and press the PICTURE button. The portion except the pattern will be frozen.
6 Start recording.
The picture will be recorded in the memorized pattern.

To stop the digital still picture superimpose
Press the PICTURE button again or the CLEAR button (on the side panel). The still picture will be cleared and the normal recording will be continued.

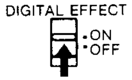
To make the pattern
A print or signboard with strong contrast can be memorized for the pattern.
The portion of low saturation will be memorized for the pattern.
By using the title reverse function, the portion of high saturation will be memorized for the pattern.

Note
- When other digital picture button is pressed, the digital still picture superimpose function will be cleared.
- When layering one title over the other, the digital still picture superimpose function cannot be operated.

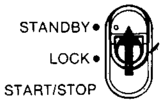
(K-4)



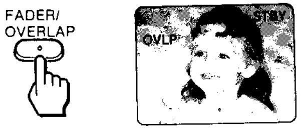
1



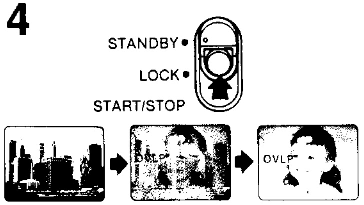
2



3



4



To Record a New Scene Gradually from the Last Recorded Scene

— Overlap (K-4)

This function can be operated at camera recording (At playback, it cannot be operated.)

1 Set the DIGITAL EFFECT switch to ON.
2 After recording the scene to be overlapped, set the recorder in the recording pause mode.
3 Press the FADER/OVERLAP button **twice**.
4 Start recording.

To stop the overlap before operation
Press the FADER/OVERLAP button **once**.

After the overlap is executed
The overlap function will be cleared automatically.

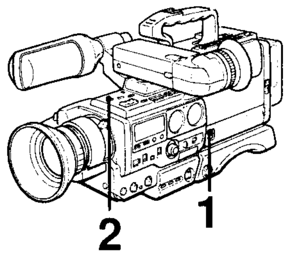
The OVLP indication will blink inside the viewfinder in the following cases
- The DIGITAL EFFECT switch has been set to ON during recording.
- Other digital picture button has been pressed.
When the OVLP indication blinks, the overlap function cannot be used.
To operate the overlap function, find the last scene with the EDITSEARCH button and then press the FADER/OVERLAP button **twice**.

To overlap on a scene of the recorded tape

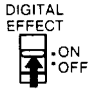
1 Set the DIGITAL EFFECT switch to ON.
2 Set the recorder in the recording pause mode by sliding the STANDBY switch up.
3 Find the last scene to be overlapped with the EDITSEARCH button.
4 Press the FADER/OVERLAP button twice.
5 Start recording.

Notes
- When other digital picture button is pressed, the overlap function will be cleared.
- When the START/STOP button is pressed, the picture may be disturbed momentarily. This is not a failure of the unit.

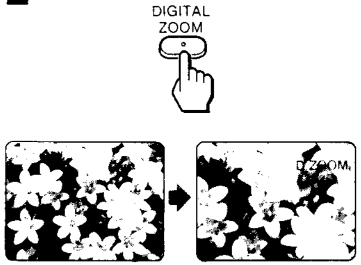
(K-5)



1



2



To Zoom up the Center Portion of the Picture Twice

— Digital Zoom (K-5)

To zoom up during recording
Set the POWER switch to CAMERA.

1 Set the DIGITAL EFFECT switch to ON.
2 During recording, press the DIGITAL ZOOM button at the point where you zoom up the subject.

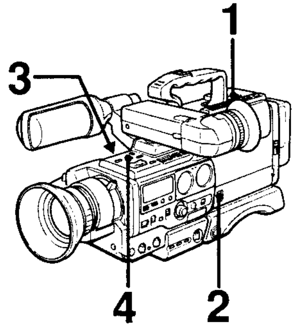
To zoom up during playback

1 Set the POWER switch to VTR and play back the tape.
2 Set the DIGITAL EFFECT switch to ON.
3 During playback, press the DIGITAL ZOOM button at the point of the subject where you want to zoom up.

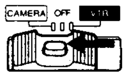
When the picture which is zoomed up twice at camera recording is zoomed up twice by pressing the ZOOM button at playback, you can view the picture four times as large as that of the real subject.

To stop the digital zoom
Press the DIGITAL ZOOM button again or the CLEAR button (on the side panel).

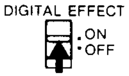
(K-6)



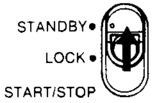
1


CAMERA
OFF
VTR

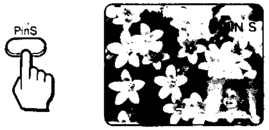
2


DIGITAL EFFECT
ON
OFF

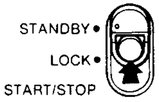
3


STANDBY
LOCK
START/STOP

4



5


STANDBY
LOCK
START/STOP

To Record a Desired Shaped Picture in the Desired Portion of the Still Picture

— Picture in Still

To record a small new scene in the still picture (K-6)

1 Set the POWER switch to CAMERA.
2 Set the DIGITAL EFFECT switch to ON.
3 Set the recorder in the recording pause mode.
4 Point the camera towards the subject which you want to make in the still picture and press the P in S button.
The small picture will appear in the lower right position of the still picture.
5 Start recording.
The new scene will be recorded in the small picture.

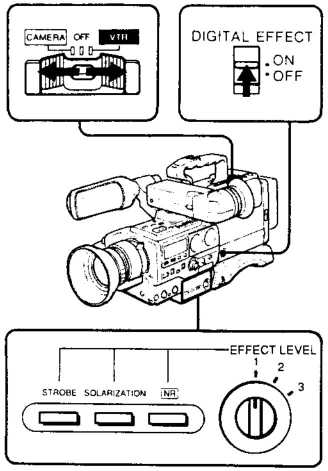
To view the small playback picture in the still picture.

1 Set the POWER switch to VTR and play back the tape.
2 Press the P in S button in the desired scene.
The scene when the P in S button is pressed will be frozen and the following scene will be viewed in the small picture.

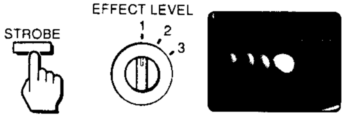
To stop the picture in still
Press the P in S button again or the CLEAR button (on the side panel). The small picture will be cleared and normal playback will be continued.

Note
When other digital picture button is pressed, the picture in still function will be released.

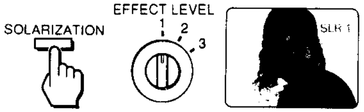
(K-7)


CAMERA
OFF
VTR
DIGITAL EFFECT
ON
OFF
EFFECT LEVEL
1
2
3
STROBE
SOLARIZATION
NR

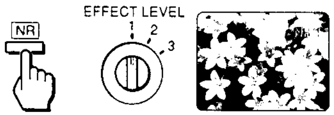
(K-8)


STROBE
EFFECT LEVEL
1
2
3

(K-9)


SOLARIZATION
EFFECT LEVEL
1
2
3

(K-10)


NR
EFFECT LEVEL
1
2
3

Strobe/Solarization/Noise Reduction

(K-7)

This function can be operated at camera recording and at playback.
Set the POWER switch to CAMERA or VTR and set the DIGITAL EFFECT switch to ON.

To record or play back the moving white object with the after-image — Strobe (K-8)
Press the STROBE button.

The level of the strobe effect can be changed with the EFFECT LEVEL control.
When the EFFECT LEVEL control is set to 3, the level is increased to the maximum.

To record or play back a picture with a solarization effect — Solarization (K-9)
Press the SOLARIZATION button.

The level of the solarization effect can be changed with the EFFECT LEVEL control. When the EFFECT LEVEL control is set to 3, the level is increased to the maximum.

To record or play back a picture with noise reduced — Noise Reduction (K-10)
Press the NR button.

Set the EFFECT LEVEL control to change the effect.

Stop Motion/Flash Motion/Multi-Picture

This function can be operated at camera recording and the playback.
Set the POWER switch to CAMERA or VTR and set the DIGITAL EFFECT switch to ON. **(K-11)**

To freeze a picture — Stop Motion
Press the STOPMOTION button. **(K-12)**

To record or play back still pictures successively at specific intervals — Flash Motion
Press the FLASHMOTION button. **(K-13)**

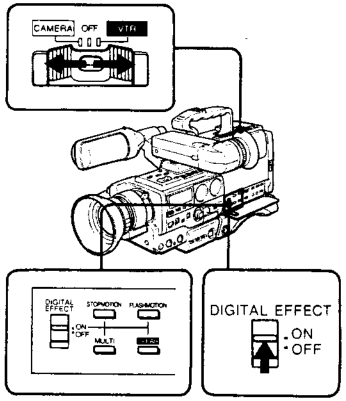
By pressing the FLASHMOTION button, the intervals at which the still picture is switched are changed.

To record or play back 9 frames picture on the screen — Multi-Picture
Press the MULTI button. **(K-14)**

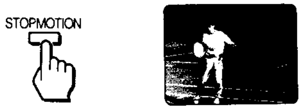
To stop the digital picture (K-15)
Press the CLEAR button (on the side panel).

When other digital picture button is pressed, the function of the pressed button will work.

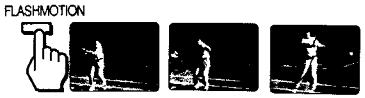
(K-11)


CAMERA
OFF
VTR
DIGITAL EFFECT
STOPMOTION
FLASHMOTION
ON
OFF
MULTI
DIGITAL EFFECT
ON
OFF

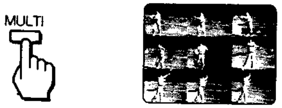
(K-12)


STOPMOTION

(K-13)


FLASHMOTION

(K-14)



(K-15)

Preparation for Playback

When the VTR is connected to the TV, refer to the pages 82 to 84.

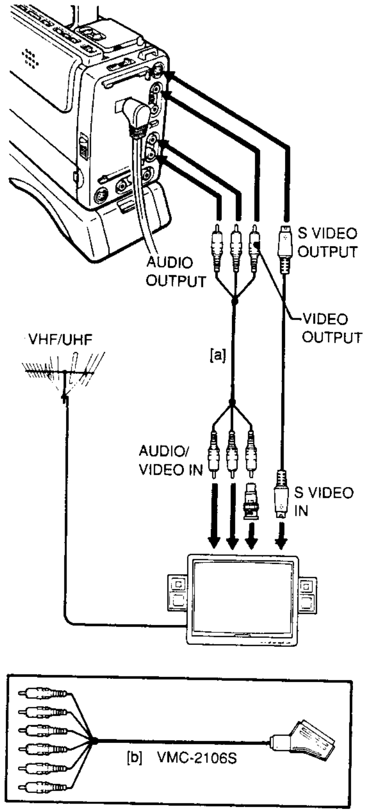
Connecting a TV (or colour monitor) equipped with audio/video input connectors

(L-1)

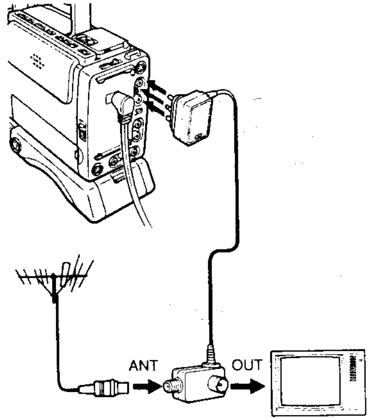
Leave the TV aerial cable connected to the TV.

1 Connect the CCD-V6000E to the TV using the supplied or an optional audio/video cable to match the connectors on the TV.
   [a] Supplied cable: to phono and BNC-type connectors
   [b] Commercially available connecting cable like Sony VMC-2106S: to a 21-pin connector (EUROCONNECTOR)
   When a TV is equipped with the S VIDEO input connector, connect the S VIDEO OUTPUT to the S video input with the supplied connecting cable with the S connectors.
2 Set the TV/VIDEO selector button on the TV to VIDEO.

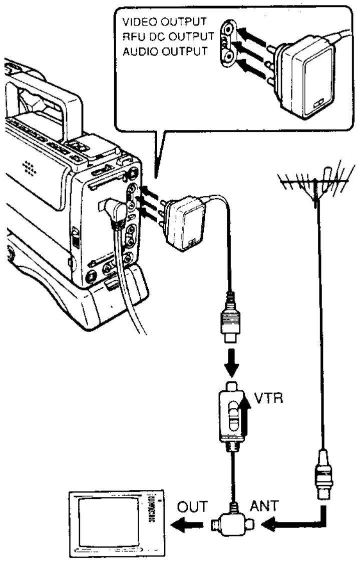
(L-1)


S VIDEO OUTPUT
AUDIO OUTPUT
VIDEO OUTPUT
VHF/UHF
[a]
AUDIO/ VIDEO IN
S VIDEO IN
[b] VMC-2106S

(L-2)



(L-3)



Preparation for Playback

Connecting a TV without audio/ video input connectors

Use an RFU adaptor(not supplied).
For the type of the RFU adaptor to be used for your TV system and details about the RFU adaptor, consult your Sony service facilities.

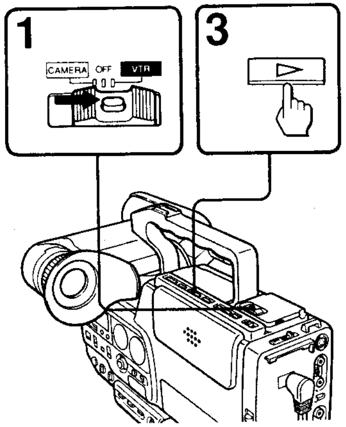
For the customers using the RFU adaptor without an aerial selector (L-2)
Connect the RFU adaptor, CCD-V6000E, the aerial and TV as shown in the illustration. Then adjust one of the TV programme positions to receive the signal from the video camera recorder and select the same programme position on the TV.

When you watch a TV programme
Turn off the camcorder or disconnect the RFU adaptor from the camcorder.

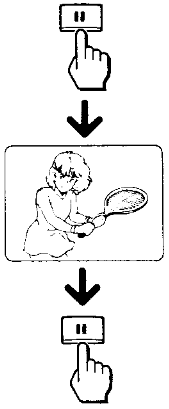
For the customers using the RFU adaptor with an aerial selector (L-3)
Connect the RFU adaptor, the aerial selector, CCD-V6000E, the aerial and TV as shown in the illustration. Then adjust one of the TV programme positions to receive the signal from the video camera recorder. Then set the selector switch on the aerial selector to VTR and select the same programme position on the TV.

When you watch a TV programme
Set the selector switch on the aerial selector to TV.

(L-4)



(L-5)



Playback

Turn on the TV (or colour monitor), and select the programme position for viewing a playback picture (or set the TV/VIDEO selector to VIDEO).

(L-4)

1 While pressing the small button, set the POWER switch to VTR.
2 Insert a cassette.
3 Press the ▷ button.
Playback will start.

To stop the tape, press the □ button.

After using, be sure to set the POWER switch on the recorder to OFF.

To view a still picture (L-5)
Press the **II** button during playback. To resume playback, press the **II** button again.

Monitoring a High-Speed Picture

During playback — Picture search

1 In the playback mode, press the ◀◀ or ▶▶ button.
The picture will be monitored at high speed as long as it is kept pressed.
2 Release the ◀◀ or ▶▶ button at the desired point.
Normal playback will resume.

During fast-forward or rewind — Skip scan

1 Press the ▶▶ button in fast-forward mode or press the ◀◀ button in rewind mode. The picture is displayed while the button is kept pressed.
2 Release the ◀◀ or ▶▶ button to resume normal fast-forward or rewind mode.

Frame-by-frame playback
Press the II▶ button in the still picture mode.
To resume normal playback, press the ▷ button.
Even if you press the II▶ button in the normal playback mode, "x1" indication appears in the viewfinder and the normal playback will continue.

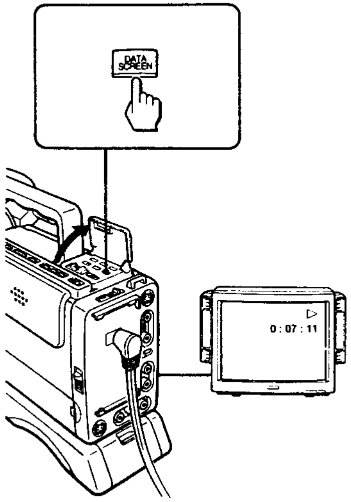
Slow motion playback
Press the I▶ button in the still picture mode or playback mode. To resume normal playback, press the ▷ button.

To adjust the frame-by-frame and slow playback pictures
Press the SLOW ADJ buttons.
The adjustment can be kept memorized until the lithium battery is exhausted.

Notes

- If you move the position of the POWER switch during playback, the tape will stop. When you move the POWER switch to CAMERA in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- The sound will be muted in the high-speed picture.
- When a tape is recorded in SP mode, a high-speed picture may be noisy with many streaks and become black and white. Streaks will be wider than those of an LP-recorded tape.
- When a tape is recorded in the SP mode, streaks will appear and sound will be muted in the still picture, frame-by-frame playback and slow playback modes.
- When the playback picture is viewed on another VTR or the viewfinder of this unit, adjust the picture again.
- When a tape is recorded on another VTR, adjust the playback picture, However in some cases the picture may not be adjusted.
- Noise may appear in the still picture mode.

(L-6)



To Display the Indication on the Viewfinder Screen on the TV

(L-6)

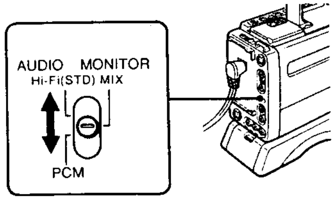
Press the DATA SCREEN button.
The indication on the viewfinder screen is superimposed on the TV programme. It is convenient to check the indication on the TV screen when the playback picture is viewed on the TV or when the video camera recorder is operated from a distance using the Remote Commander.

To clear the indication, press the DATA SCREEN button again.

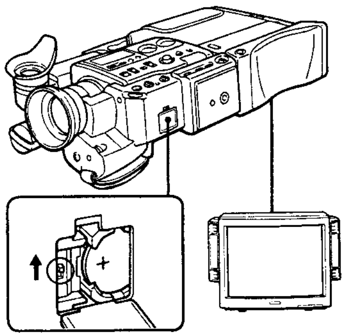
Notes

- To edit from the CCD-V6000E to another VTR, clear the indication on the TV or the indication will be recorded with the picture.
- During playback or in the still picture mode, the data indications appear to shake.

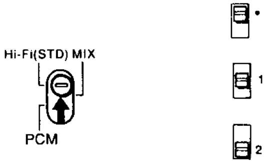
(L-7)



(L-8)



(L-9)



Selecting the Sounds to be Monitored

The sounds to be monitored can be selected by the AUDIO MONITOR switch. **(L-7)**

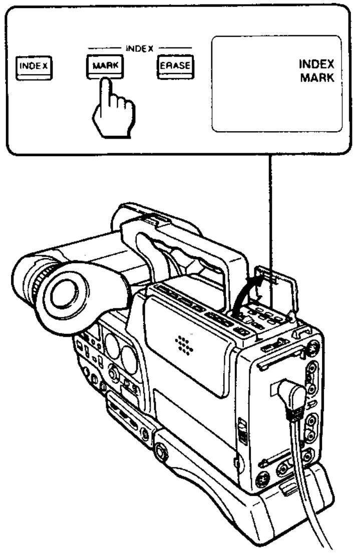
Hi-Fi (STD)	To monitor the hi-fi stereo sound recorded on the standard track
PCM	To monitor the digital stereo sound recorded on the PCM track
MIX	To monitor the hi-fi and digital stereo sounds recorded on the standard and PCM tracks

Playing back the audio dubbed tape
Set the AUDIO MONITOR switch to PCM or MIX. If the switch is set to Hi-Fi, the audio dubbed sound cannot be monitored.

Playing back the dual sound recorded tape

Normally set the hi-fi sound output select switch to "•" (upper) position. **(L-8)**
When the dual sound recorded tape is played back, set the AUDIO MONITOR switch to Hi-Fi (STD) and select the desired sound with the hi-fi sound output select switch. **(L-9)**
[a] AUDIO MONITOR switch
[b] Hi-fi sound output select switch

(M-1)



To Mark Index Signals during Playback

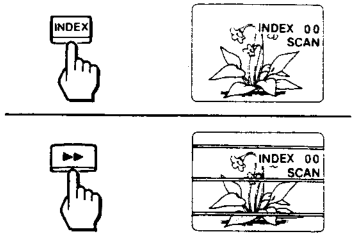
The desired programmes can be easily located by the index signals marked on the tape.
Press the MARK button at any desired point on the tape during playback. **(M-1)**

When the index signal is marked in the playback pause mode, the index signal will be marked just after the playback pause mode is released.

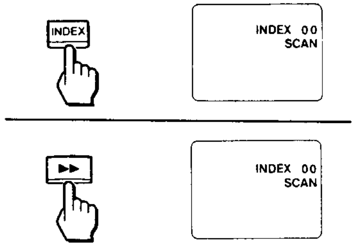
Notes on marking the index signals
- The index signals can be marked at any desired point. Make sure there is more than 2 minutes of space between two index signals. If there is more than one index signal marked within an interval of 2 minutes at the normal tape speed, the unit may not function properly.
- The recorded sound cannot be heard and a black bar appears at the bottom of the playback picture while the index signal is being marked during playback. However, the recorded signals are not affected.
- The index signals cannot be registered on a cassette tape whose safety tab is slid out.

If an index signal is marked on a tape with the data code recorded
The camcorder erases the data code and marks the index signal instead. If you play back the portion of the tape on which the data code has been erased, the camcorder keeps displaying the data code immediately before the erased one. If the data code does not exist for more than 30 seconds, the data code display will then change to "– – – –" (bars).

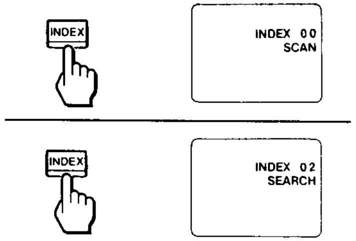
(M-2)



(M-3)



(M-4)



To Scan or Search the Programme during Playback

To scan the beginning of each programme during monitoring the picture – Index scan (1) (M-2)

1 Press the INDEX button in the playback or playback pause mode.
2 Press the ◀◀ or ▶▶ button.
The tape is played back for approximately 10 seconds at the point where the index signal is marked.
3 To continue playback, press the ▷ button.
When no button is pressed, the picture is automatically scanned to the next or previous programme.

To scan the beginning of each programme in sequence – Index scan (2) (M-3)

1 Press the INDEX button in the stop mode.
2 Press the ◀◀ or ▶▶ button.
The tape is played back for approximately 10 seconds at the point where the index signal is marked.
3 Press the ▷ button to continue playing back the desired picture.

When no button is pressed, the picture is automatically scanned to the next or previous programme.

To locate the desired programme – Index search (M-4)

1 Press the INDEX button in the stop or playback mode.
2 Press the INDEX button again until the index number of the desired programme is displayed on the viewfinder screen.
3 Press the ◀◀ or ▶▶ button.
The playback is started at the beginning of the designated picture.

To correct the index number

Press the □ button and repeat the above steps.

(M-5)

To Erase Index Signals

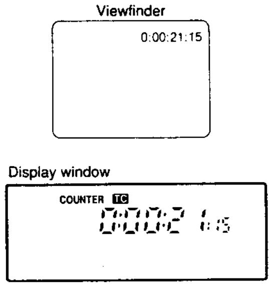
(M-5)

1 Play back the beginning of the picture to be erased by index scan or index search.
2 Within approximately 10 seconds, while the tape is being played back, press the ERASE button.
When the index signal is erased while index scanning, the index scan is resumed.
When the index signal is erased while index searching, normal playback is begun.

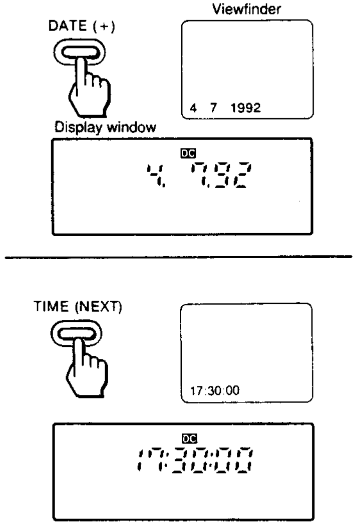
Notes on erasing the index signal

- Press the ERASE button more than 2 seconds after the playback starts.
- If the safety tab on the cassette is slid out, the index signal cannot be erased.
- While an index signal is being erased, the recorded sound cannot be heard and a black bar appears at the bottom of the playback picture.
  However, recorded signals are not affected.
- The index signal marked by a VTR such as the EV-S1000E series can be detected with this unit but cannot be erased.
  The index signal marked by this unit can be detected with a VTR such as the EV-S1000E series but cannot be erased.
- When the audio is dubbed in the portion where the index signal is marked, the index signal may be erased.
- While an index signal is erased, the RC time code and data code on the same portion of the tape are erased as well. The "– – – –" (bar) indication will appear when that portion is played back.
  To use that tape for editing using an editing controller, rewrite the RC time code referring to page 80.

(N-1)



(N-2)



Displaying the RC Time Code/Data Code

The RC time code and data code (recording date and time) recorded on a tape can be displayed in the viewfinder and display window during playback. You can easily locate the desired tape programme by observing the RC time code and data code.
You can also duplicate the RC time code on another tape while they are displayed.

To Display the RC Time Code

(N-1)

Set the COUNTER mode select switch to TIME CODE.
The TC indication appears in the display window and the RC time code is displayed in the viewfinder and display window.
The frame digits are displayed only in the viewfinder.

To display the RC time code on the TV screen
Press the DATA SCREEN button.

To Display the Data Code

(N-2)

1 Set the POWER switch to VTR.
2 Press the DATE button to display the date, or the TIME button to display the time.
The DC indication appears in the display window with the date or time.

To clear the data code indication
Press the same button again.

To display the data code on the TV screen

- During normal or various mode playback, simply press the DATE or TIME button.
- In stop, fast-forward or rewind mode, first press the DATA SCREEN button and then press the DATE or TIME button.
- Data code can be displayed only when the POWER switch is set to VTR.

Notes on the data code

- The data code cannot be displayed when the POWER switch is set to CAMERA or OFF.

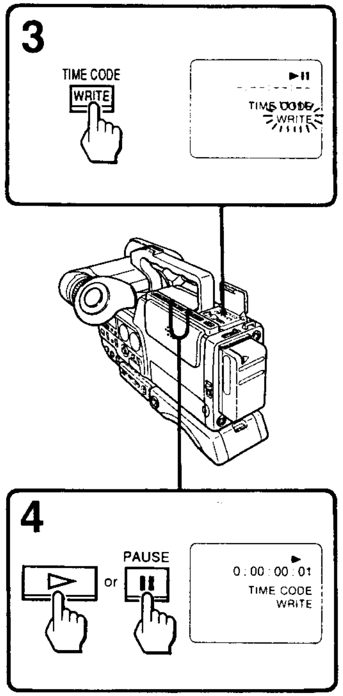
When bars (– – – –) may appear in place of the RC time code or data code indication

- A blank portion of the tape is played back.
- The data code on the tape is illegible due to tape damage or noise.
- The current date and time are not set.
- The tape is in fast-forward or rewind mode.
- The camcorder is in frame recording mode.

When the remote control unit provided with the counter display is connected
The counter indicatin on the remote control unit can be switched to the RC time code indication by setting the COUNTER mode to TIME CODE on this camcorder. In this case, "F:FF:FF" indication may appear on certain units. This is not a failure of the camcorder of the remote control unit.

Note
While dubbing an audio signal on the PCM track, bars (– – – –) appear in place of the RC time code or data code indication.

(O)



Writing the RC Time Code on a Prerecorded Tape

You can write the RC time code on a tape without affecting the prerecorded picture and sound.

To Write the RC Time Code from the Beginning of the Tape

(O)

1 Rewind the tape to the beginning.
2 Set the camcorder to the playback pause mode.
3 Press the TIME CODE WRITE button.
The TIME CODE WRITE indication appears in the viewfinder with WRITE flashing.
4 Press the ▷ button or the ❚❚ button to start playback.
The WRITE indication stops flashing and the RC time code writing starts from 0:00:00:00.

To stop the RC time code writing
Press the □ button (or another tape transport button).

To Write the RC Time Code from the End of the RC time Code Prerecorded Portion

Rewind the tape up to the portion on which the RC time code has been written, and follow steps 2 to 4 of " To Write the RC Time Code from the Beginning of the Tape". The RC time code is written continuously.

To Use the Video Editing Controller

To edit a tape using the RC time code, you can use the video editing controller RM-E500 or RM-E700 by connecting the REMOTE connector on this unit to the Ͼ connector on the editing controller. The RC time code recorded with this camcorder are output from the Ͼ REMOTE connector.
While the CCD-V6000E is connected, the double speed playback mode and the reverse frame-by-frame playback mode do not function on the RM-E500 or RM-E700.
When using the RM-E500 or RM-E700 in the shuttle mode B, you can set the CCD-V6000E only to the normal speed reverse playback mode and the fast-reverse playback (review) mode by turning the shuttle dial to the reverse direction, and to the normal speed reverse playback mode by turning the jog dial to the reverse direction.
For details on connection and operation, refer to the manual of the video editing controller.

Note
The RC time code and data code recorded with this camcorder are not output from the S VIDEO connector or VIDEO jack.

Notes on RC time code writing
- If you start RC time code writing from the portion on the tape without a time code, the time code is written from 0:00:00:00 even when the tape is not at its beginning.
- By writing the RC time code, the data code and the index signals recorded on the tape are erased.
- If the RC time code writing is performed on a blank portion of a tape, the time code is written correctly, although the screen is noisy.
- If you intend to write the RC time code from the middle of a tape without a time code, writing starts several frames before the current picture.

The RC time code writing is cancelled when:
- you press the TIME CODE WRITE button again in the playback pause mode.
- you press the INDEX button on the Commander in the playback pause mode.
- you change the playback mode to another mode.

TV Programme Recording

The following connections make both TV programme viewing/recording and tape playback possible.

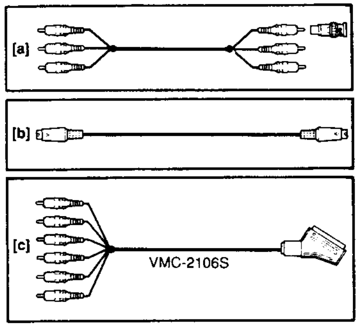
Combination of the Equipment to be Used

Connection example 1 (page 83)
To connect the VTR with an input selector

Connection example 2 (page 84)
To connect the VTR without input selector.

Connecting Cables

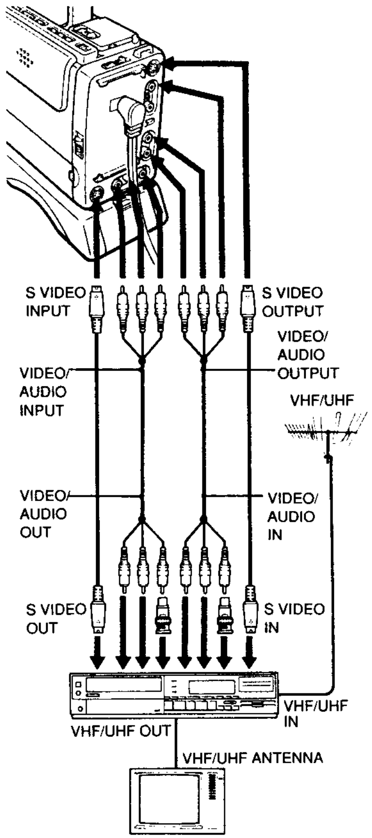
(P-1)



- For aerial connections, use 75-ohm coaxial cables.
- For video/audio connection, use the supplied AV cable, connecting cable with S connectors or an optional audio/video cable to match the connectors on the equipment to be connected.
  - **[a]** Supplied AV cable: for stereo equipment
  - **[b]** Connecting cable with S connectors
  - **[c]** Commercially available connecting cable like Sony VMC-2106S: for a 21-pin connector (EUROCONNECTOR)

Notes
- When the conventional 8 mm cassette is used, the picture cannot be recorded in the Hi8 mode.
- For viewing the high quality picture in the Hi8 mode, We recommend to connect another equipment to the S VIDEO INPUT connector.
- When the equipment is connected to the VIDEO INPUT and S VIDEO INPUT jacks, the signals from the S VIDEO INPUT jack take precedence.
- When the equipment is connected only to the VIDEO INPUT jack, the signals cannot be output from the S VIDEO OUTPUT jack.

(P-2)



Connection Example 1

(P-2)

To connect the VTR with an input selector

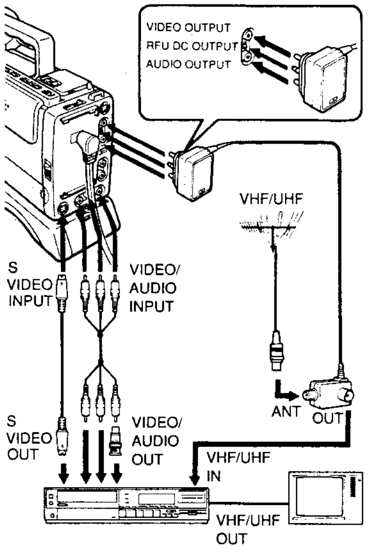
Connections
Connect the equipment as shown in the illustration.
When the VTR is equipped with the S video output/input connectors, connect the S VIDEO INPUT/OUTPUT on this unit to the S video output/input with the supplied connecting cable with S connectors.

TV programme recording
1. Turn on the VTR and TV.
2. While pressing the small button, set the POWER switch on the CCD-V6000E to VTR.
3. Select the programme position for the VTR on the TV.
4. Set the input selector to TUNER and select the TV programme to be recorded on the VTR.
5. Insert a cassette into the CCD-V6000E and slide the ● REC switch.
   Recording will start.

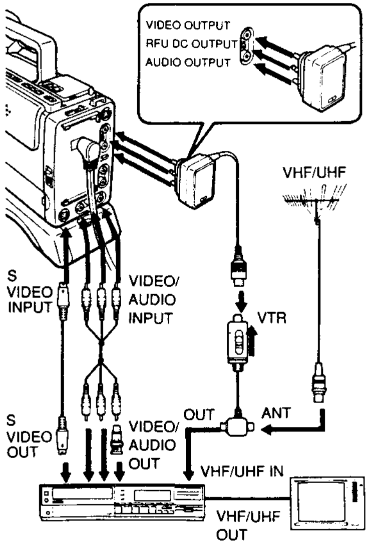
To view another TV programme while recording
Simply select the desired programme on the TV.

Playback
1. Turn on the VTR and TV.
2. While pressing the small button, set the POWER switch on the CCD-V6000E to VTR.
3. Set the input selector on the VTR to LINE and select the programme position for the VTR on the TV.
4. Insert a cassette into the CCD-V6000E and press the ▷ button. Playback will start.

(P-3)


VIDEO OUTPUT
RFU DC OUTPUT
AUDIO OUTPUT
VHF/UHF
S VIDEO INPUT
VIDEO/ AUDIO INPUT
S VIDEO OUT
VIDEO/ AUDIO OUT
ANT
OUT
VHF/UHF IN
VHF/UHF OUT

(P-4)


VIDEO OUTPUT
RFU DC OUTPUT
AUDIO OUTPUT
VHF/UHF
S VIDEO INPUT
VIDEO/ AUDIO INPUT
VTR
S VIDEO OUT
VIDEO/ AUDIO OUT
OUT
ANT
VHF/UHF IN
VHF/UHF OUT

TV Programme Recording

Connection Example 2

To connect the VTR without input selector

Connect the equipment as shown in the illustration.
Use an RFU adaptor (not supplied).
For the type of the RFU adaptor to be used for your TV system and details about the RFU adaptor, consult your Sony service facilities.

For the customers using the RFU adaptor without an aerial selector (P-3)
Connect the equipment as shown in the illustration.

TV programme recording
Disconnect the RFU adaptor from the camcorder.

1 Turn on the VTR and TV.
2 Set the POWER switch on the camcorder to VTR.
3 Select the TV channel (programme) to be recorded on the VTR.
4 Insert a cassette into the camcorder and slide the ● REC switch. Recording will start.

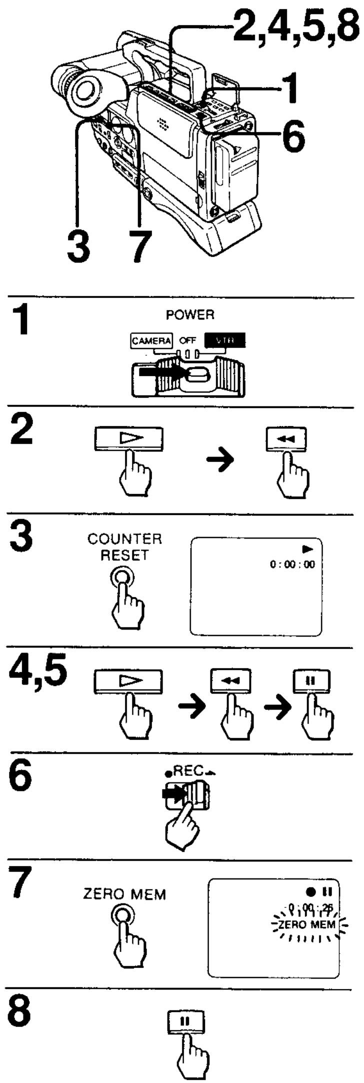
Playback
Turn on the VTR and TV. Then select the channel for the VTR on the TV. Set the POWER switch on the CCD-V6000E to VTR, and play back the recorded tape by pressing the ▷ button.

For the customers using the RFU adaptor with an aerial selector (P-4)
Connect the equipment as shown in the illustration.

TV programme recording
Set the selector switch on the aerial selector to ANT.
Then proceed above steps 1 to 4.

Playback
Turn on the VTR and TV. Set the selector switch on the aerial selector to VTR and select the programme position for the VTR on the TV. Set the POWER switch on the CCD-V6000E to VTR, and play back the recorded tape by pressing the ▷ button.

(Q)


2,4,5,8
1
6
3
7
1
POWER
CAMERA
OFF
VTR
2
3
COUNTER RESET
0:00:00
4,5
6
●REC
7
ZERO MEM
● II
0:00:26
ZERO MEM
8

Insert Recording

To Insert a Picture or a TV Programme from Another VTR

(Q)

Monitor the picture being inserted on the viewfinder screen.
Make sure the COUNTER mode select switch is set to NORMAL.

1 While pressing the small button, set the POWER switch to VTR.
2 Locate the point on the tape where the insert should end by pressing the ◀◀ or ▶▶ button during playback.
3 Display the counter in the display window and press the COUNTER RESET button. The counter is reset to zero.
4 Press the ◀◀ button during playback to rewind the tape a little further than the point where the insert should begin.
5 Release the ◀◀ button to resume playback and press the II button at the insert starting point.
6 Slide the ● REC switch in the arrow direction to set the unit to recording pause mode.
7 Press the ZERO MEM button.
The insert ending point is stored in memory.
8 To start recording, press the II button.

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

Use of the Linear Time Counter

The linear time counter in the viewfinder and the display window indicates the elapsed time of the recording or playback.
To display the counter, set the COUNTER mode select switch to NORMAL.

To Index the Whole Tape

Press the COUNTER RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

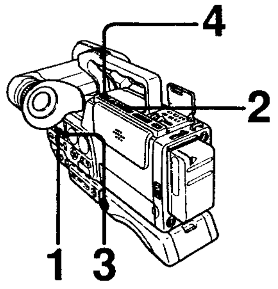
Notes on the counter

- The counter reading and the point of the tape may not correspond exactly. Use the counter as a guide.
- The counter does not operate for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast-forward and rewind operations.
- There will be also a time lag of several seconds when the tape recorded in LP and SP modes mixed or the tape having a blank portion between the recorded portions is played back.

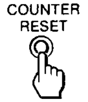
Notes on the RC time code and the ZERO MEM functions

- The COUNTER RESET and ZERO MEM buttons are not operative when the RC time code or data code is displayed. To use the ZERO MEM function, reset the COUNTER select switch to NORMAL.(See page 85).
- If you change the COUNTER mode from NORMAL to TIME CODE when the ZERO MEM indication flashes, the ZERO MEM mode is canceled.

(R)



1



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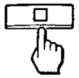
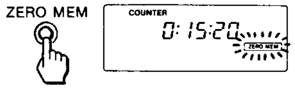
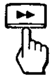


3



4



To Return to a Pre-registered Point

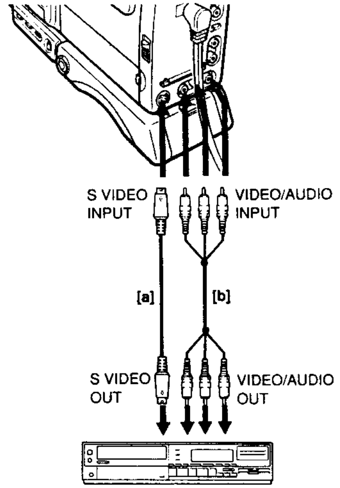
(R)

1 During recording or playback, press the COUNTER RESET button at the point you later want to locate.
2 Press the □ button when the recording or playback has finished.
3 Press the ZERO MEM button. The "ZERO MEM" indicator will flash in the display window.
4 Press the ▶▶ or ◀◀ button.
The tape will be rewound or sent forward and stop automatically when the counter reaches approximately zero.

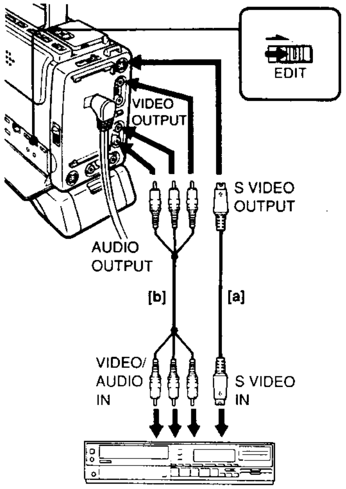
Notes on ZERO MEM button

- The ZERO MEM button does not function during recording or playback mode.
- Be sure to press the ZERO MEM button when the tape is stopped.
- The ZERO MEM mode is cancelled automatically once the tape is rewound or sent forward to zero.

(S-1)



(S-2)



Tape Editing

To edit a home movie tape, you will need another VTR or another video camera recorder.

To Edit from Another VTR

(S-1)

1 While pressing the small button, set the POWER switch on the CCD-V6000E to VTR.
2 Start playback on another VTR.
3 Slide the ● REC switch on the CCD-V6000E.

To Edit onto Another VTR

(S-2)

1 While pressing the small button, set the POWER switch on the CCD-V6000E to VTR and turn on the other VTR.
2 Slide the EDIT switch on the CCD-V6000E in the direction of the arrow.
3 Set the input selector on the VTR to LINE.
4 Press the **II** button on the CCD-V6000E during playback at the point where you want to start recording.
5 Press the record button on the other VTR, pressing the **II** button.
6 Release the **II** buttons on both units. Recording will start.

[a] When the VTR or video camera recorder is equipped with the S video output/input connector, connect the S VIDEO INPUT/OUTPUT on this unit to the S video output/input with the supplied connecting cable with S connectors.

[b] When the VTR to be used is a monaural type, use a commercially available audio/video connecting cable like Sony VMC-910MS/920MS.

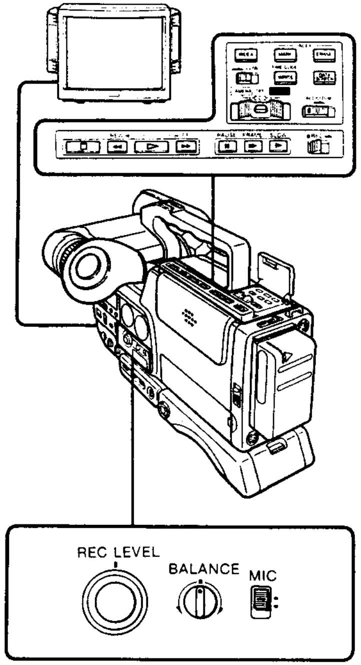
After editing, turn off both units and be sure to slide the EDIT switch in the reversed direction to the arrow.

To cut off an unnecessary portion
Press the **II** button on the recorder at the beginning of the unnecessary portion.
Release it where you want to resume recording.

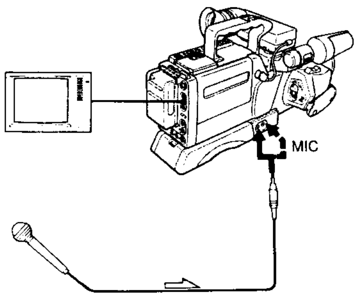
Function of the EDIT switch
Slide this switch in the direction of the arrow (ON) whenever you edit tapes. Signal loss that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.
When recording or playing back normally, keep this switch in the reversed direction to the arrow (OFF).

Notes on the RC time code and data code
The RC time code and data code recorded with this camcorder are not output from the S VIDEO connector or VIDEO jack.

(T-1)



(T-2)



To Dub the Audio Signals

Any desired music or narration can additionally be recorded on the PCM track, while the picture and sound pre-recorded on the standard track are not affected. Monitor the picture on the TV. **(T-1)**

Example 1: To dub the signals from the microphone(s)

(T-2)

Operation

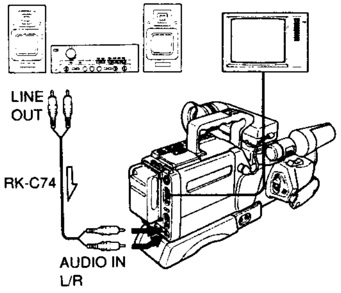
1 Turn on the power of the TV and select the programme position for the recorder or video input.
2 While pressing the small button, set the POWER switch to VTR.
3 Press the ▷ button.
4 Decide where the audio dubbing is to start, and press the **❚❚** button.
5 Slide the AUDIO DUB button in the direction of the arrow.
6 Set the MIC switch to AUTO.
The recording level will be adjusted automatically.
7 Press the **❚❚** button to release pause mode and start dubbing.

To adjust the recording level manually
Set the MIC switch to MANU in step 6 and adjust the volume and balance with the REC LEVEL control and BALANCE control. (See page 35.)

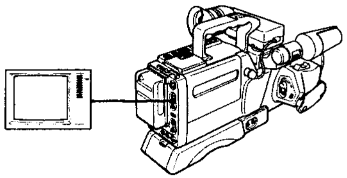
Notes

- If the microphone is connected to the MIC R jack and the POWER switch is set to VTR, noises will be recorded.
To avoid it, connect the microphone to the MIC L jack.
- When the POWER switch is set to CAMERA and +VTR switch is slid in the direction of the arrow. The sounds from the built-in microphone will be recorded on the L channel of the PCM track.

(T-3)



(T-4)



Example 2: To dub the signals from the audio system

(T-3)

Use a commercially available audio connecting cable like Sony RK-C74.

Operation

1 Turn on the power of the TV and select the programme position for the recorder or video input.
2 While pressing the small button, set the POWER switch to VTR.
3 Press the ▷ button.
4 Decide where the audio dubbing is to start, and press the **❚❚** button.
5 Slide the AUDIO DUB button in the direction of the arrow.
6 Adjust the volume and balance with the REC LEVEL control and BALANCE control.
7 Press the **❚❚** button to release pause mode and start dubbing.

Note
When the microphones are connected to the MIC jacks, the sounds from the audio system cannot be dubbed.

Example 3: To dub the signals with the built-in stereo microphone

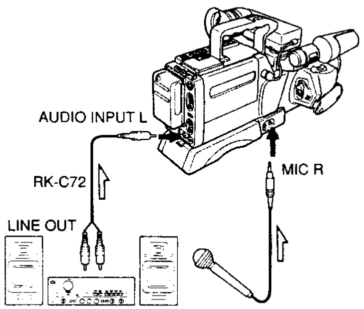
(T-4)

Operation

1 Turn on the power of the TV and select the programme position for the recorder or video input.
2 While pressing the small button, set the POWER switch to CAMERA.
3 Slide the +VTR switch in the direction of the arrow.
4 Slide the STANDBY awitch up.
5 Press the ▷ button.
6 Decide where the audio dubbing is to start, and press the **❚❚** button.
7 Slide the AUDIO DUB button in the direction of the arrow.
8 Set the MIC switch to AUTO.
The recording level will be adjusted automatically.
9 Press the **❚❚** button to release pause mode and start dubbing.

To adjust the recording level manually
Set the MIC control to MANU in step 7 and adjust the volume and balance with the REC LEVEL control and BALANCE control. (See page 35.)

(T-5)



Example 4: To dub the signals from the microphone and the audio system

(T-5)

Connect the audio system to the AUDIO INPUT L jack of this unit using a commercially available audio connecting cable like Sony RK-C72 and the microphone to the MIC R jack.

Operation

1. Turn on the power of the TV and select the programme position for the recorder or video input.
2. While pressing the small button, set the POWER switch to VTR.
3. Press the ▷ button.
4. Decide where the audio dubbing is to start, and press the **II** button.
5. Slide the AUDIO DUB button in the direction of the arrow.
6. Adjust the volume and balance of the audio system with the REC LEVEL control and BALANCE control.
7. Press the **II** button to release pause mode and start dubbing.

To adjust the recording level of the microphone manually

Set the MIC switch to MANU and adjust the volume and balance with the REC LEVEL control and BALANCE control. (See page 35.)

To stop dubbing momentarily

Press the **II** button.

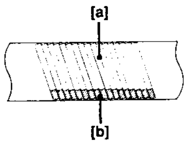
To set the recorder in the playback pause mode after releasing the dubbing pause mode

Slide the AUDIO DUB button in the direction of the arrow.

To stop dubbing

Press the □ button.

(T-6)



When an external microphone or audio system is connected, the sound will be recorded as follows.

Track Connection		PCM track	
		L (left) channel	R (right) channel
Ex. 1 (P.90)	L and R	external L microphone	external R microphone
	L	external L microphone	external L microphone
	R	no recorded	external R microphone
Ex. 2 (P. 91)		stereo system L	stereo system R
Ex. 4 (P. 92)		stereo system	external microphone

Enlarged tape (T-6)

[a] Standard track: Sounds on this track remain.
[b] PCM track: The dubbed sounds are recorded on this track.

About the picture during dubbing

- At the starting of the dubbing, upper of the picture may be distorted.
  The recording picture will not be affected.
- During dubbing or in the dubbing pause mode, a black band will appear in the screen. The recorded picture will not be affected.
- During dubbing, bars (– – – –) appear in place of the RC time code or data code indication.

To monitor the sounds during dubbing

Set the AUDIO MONITOR switch as follows.

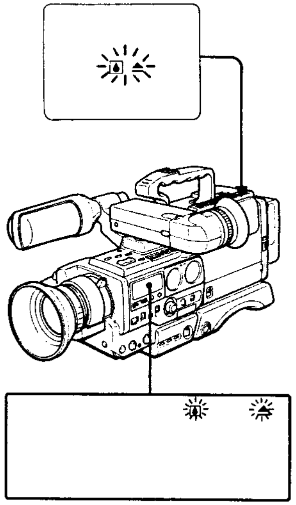
PCM: The sounds to be dubbed can be monitored.
MIX: The sounds only on the PCM track can be monitored.
Hi-Fi: The sounds to be dubbed **cannot** be monitored.

Notes on dubbing

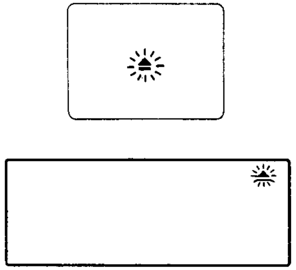
- The prerecorded sounds on the PCM track will be erased by dubbing.
- The dubbed sounds cannot be played back by the VTR without the PCM recording or playback functions.

Notes on Moisture Condensation

(U-1)



(U-2)



If the unit is brought directly from a cold to a warm location, moisture may condense inside the unit, on the surface or the tape or on the lens. In this condition, the tape may adhere to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the unit is furnished with moisture sensors.

Moisture is Present inside the Unit When:

(U-1)

The ▣ indication flashes inside the viewfinder or in the display window. The ⏏ indication also flashes if the cassette is present.
No function except for cassette ejection will work.

⬇

Eject the cassette if present, and turn off the unit and leave it with the cassette holder open at least for one hour.

⬇

The unit can be used again if the ▣ indication does not appear when the power is turned on again.

If Moisture is Present on the Surface of the Tape

(U-2)

When the tape is inserted and a tape transport button is pressed, the ⏏ indication flashes inside the viewfinder or in the display window. No function except for cassette ejection will work.

⬇

Eject the cassette and let it sit at least for one hour.
The cassette can be used again if the ⏏ indication does not appear when the cassette is inserted and a tape transport button is pressed.

If Moisture Condensation Occurs on the Lens

There are no caution indications, but the lens becomes dim. Turn off the power and leave the unit unused at least for one hour.

Precautions

Operation

- Operate the unit on 6.0 V (battery pack)/7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Do not hold the unit by the viewfinder.
- Avoid rough handling or mechanical shock to the unit. Be particularly careful of the lens.
- Do not apply excessive force to the microphone.
- Avoid shooting the same object for a long period of time (for example, using as a lookout camera or pointing the camera directly at the sun or other bright light sources) as this will damage the colour filter inside the camera and may cause a poor picture quality.
- Remove and store video cassettes after recording or playback.
- Do not wrap up the unit and operate it because heat may build up internally.
- Avoid using and storing the recorder in the following locations.
  — Locations susceptible to vibration.
  — Locations exposed to strong magnetic fields.
  — Locations near TV or radio transmitters where strong radio waves are generated.
- **Do not let sand get into the camcorder**
  When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired.
- **Do not let the camcorder get wet**
  Keep the camcorder from rain or sea water.
  It may cause malfunction and sometimes the malfunction cannot be repaired.

Care

- Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.
- When the unit will not be used for a long period of time, periodically turn on the power, operate the camera section and recorder section and play back a tape for about three minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on them, remove them with a soft cloth. Clean the recorder body with a dry, soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish. For protection, keep the lens cap on the lens when not using the camera.

Notes on Video Head Cleaning

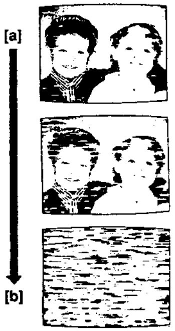
To ensure clear picture, clean the video heads periodically.
When playback pictures are noisy or hardly visible, the video heads may be contaminated.
(U-3)
[a] Slight contamination
[b] Critical contamination
In such cases,

1. Clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied), referring to its instructions.
2. After cleaning, check if the picture is clear by recording or playing back with an ordinary tape.
3. If the picture is still noisy, repeat cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

(U-3)



Using Your Recorder Abroad

Each country has special TV colour broadcast and electricity systems. Before using your recorder abroad, check the following points.

Differences in colour systems

If you prepare fully charged battery packs and the AC power adaptor which can be used in all areas with the local power supply of 100V–240V, you can use your recorder in any country. You can monitor the playback picture on the viewfinder screen. However, to monitor the playback picture on a TV, the TV must be based on the PAL system and have the video/audio inputs.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany (Former West Germany) Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Canada, Central America, Japan, Korea, Mexico, Taiwan, the Philippines, U.S.A., etc.

SECAM system countries
Bulgaria, France, Hungary, Iran, Iraq, Monaco, Poland, Former Soviet Union, etc.

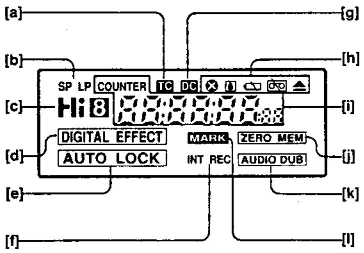
Colour Temperature and White Balance

The colour temperature indicates a property of light and is measured in K (Kelvin). If increases as the light source gets bluer and decreases as the light source gets redder. It has no direct relationship with brightness.
The camcorder automatically adjusts the white balance within the range shown below.

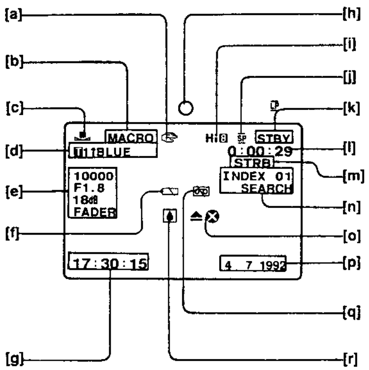
Colour temperature (K)		Light source	
	10.000	Clear sky	
Blue	8.000	Slightly overcast	
	7.000	Cloudy rainy	
	6.000		Fluorescent lamp (daylight)
	5.000	Direct sunlight	
			Fluorescent lamp (white)
White	4.000	Before/after 1 hr of sunrise/sunset.	
	3.500		Fluorescent lamp (off white) Studio lamp Halogen lamp
	3.200		
Yellow	3.000		Tungsten lamp
	2.500	Before/after 30 min of sunrise/sunset.	
Red	2.000	Sunrise/sunset	
			Candle light

Trouble Indications

(V-1)



(V-2)



Indications in the Display Window

(V-1)

- [a] RC time code mode indication
- [b] Tape speed indication
- [c] High eight mode indication
- [d] DIGITAL EFFECT indication
- [e] AUTO LOCK indication
- [f] Indicates during interval recording.
- [g] Data code mode indication
- [h] Caution indications
- [i] Time/date/counter indication
- [j] ZERO MEM (memory) indication
- [k] Indicates during audio dubbing.
- [l] Lights when the index signal is marked.

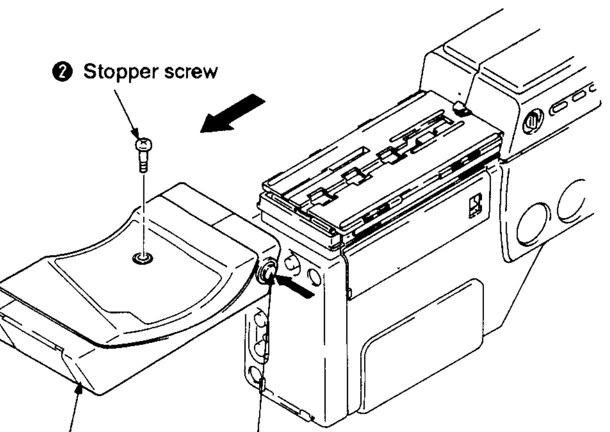
Indications inside the Viewfinder

(V-2)

- [a] Manual focusing mode indication (☞)
- [b] Macro mode indication (MACRO)
- [c] White balance mode indication (⌂, •, ☼)
- [d] Title number, color, and mode indication (T1, T2, ↑, ↓ WHT, etc.)
- [e] FADER/OVERLAP and manual mode indications (FADER, OVERLAP, shutter speed, iris, gain, etc.)
- [f] Battery indication
- [g] Data code (date or time)
- [h] Camera recording/battery lamp
- [i] Hi 8 mode indication (**Hi8**)
- [j] LP mode indication
- [k] Tape operation mode, camera operation mode indication (STBY, REC, etc.)
- [l] Liner time counter and RC time code indication
- [m] Digital picture mode indication (STRB, SLR, NR)
- [n] Index operation and zero memory mode indication (INDEX MARK, SCAN, SEARCH, etc.)
- [o] Caution indication(⏏, ⊗)
- [p] Date
- [q] Tape indication (▭)
- [r] Dew indication (▣)

SECTION 2
DISASSEMBLY

1. REMOVAL OF CABINET (LOWER) ASSEMBLY

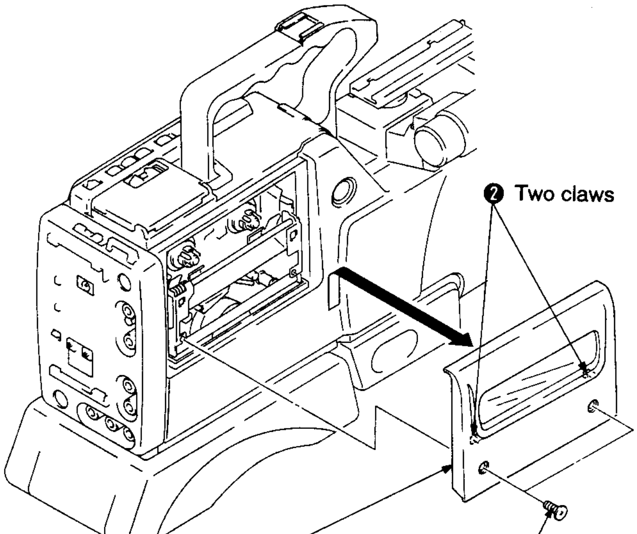


❷ Stopper screw

❶ Slide the cabinet (lower) assembly with PUSH SLIDE button pressed.

Remove the cabinet (lower) assembly in the direction of arrow.

2-2. REMOVAL OF CASSETTE LID ASSEMBLY

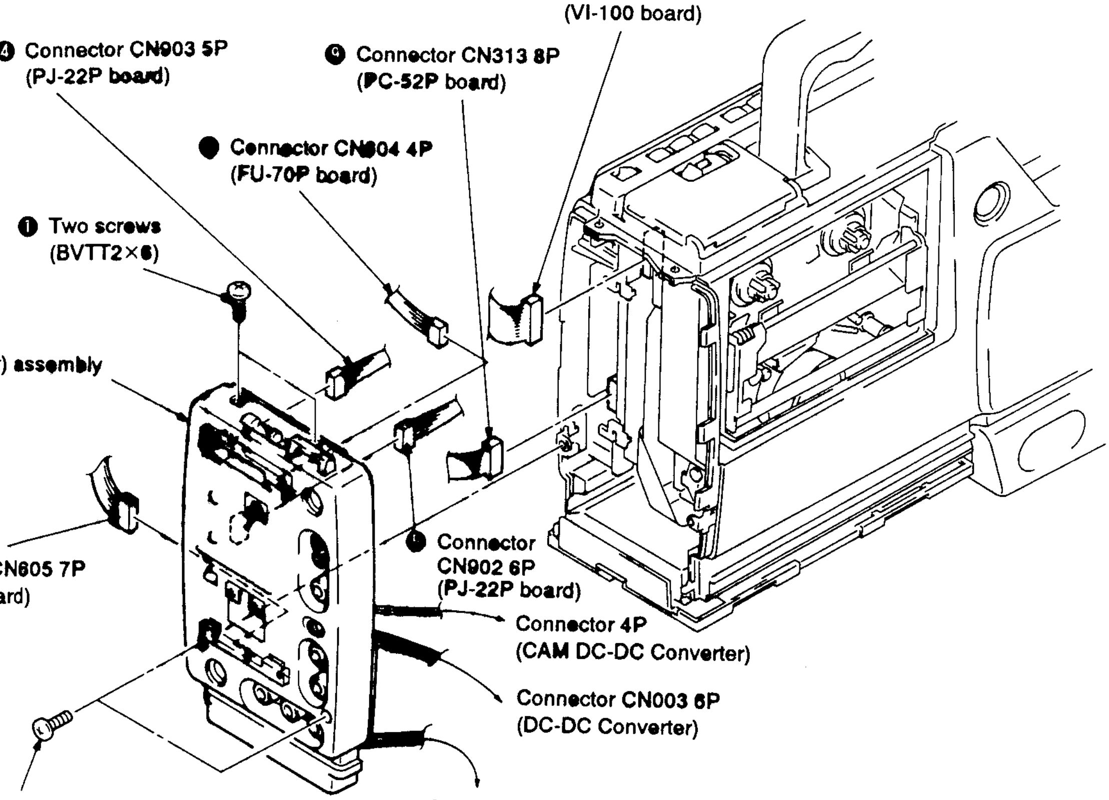


❷ Two claws

❸ Remove the cassette lid assembly in the direction of arrow.

❶ Two screws (special head screw M2×4.5)

3. REMOVAL OF CABINET (REAR) ASSEMBLY



❽ Connector CN401 10P (VI-100 board)

❹ Connector CN903 5P (PJ-22P board)

❾ Connector CN313 8P (PC-52P board)

❻ Connector CN904 4P (FU-70P board)

❶ Two screws (BVTT2×6)

❸ Cabinet (rear) assembly

❺ Connector CN902 6P (PJ-22P board)

❼ Connector CN605 7P (FU-70P board)

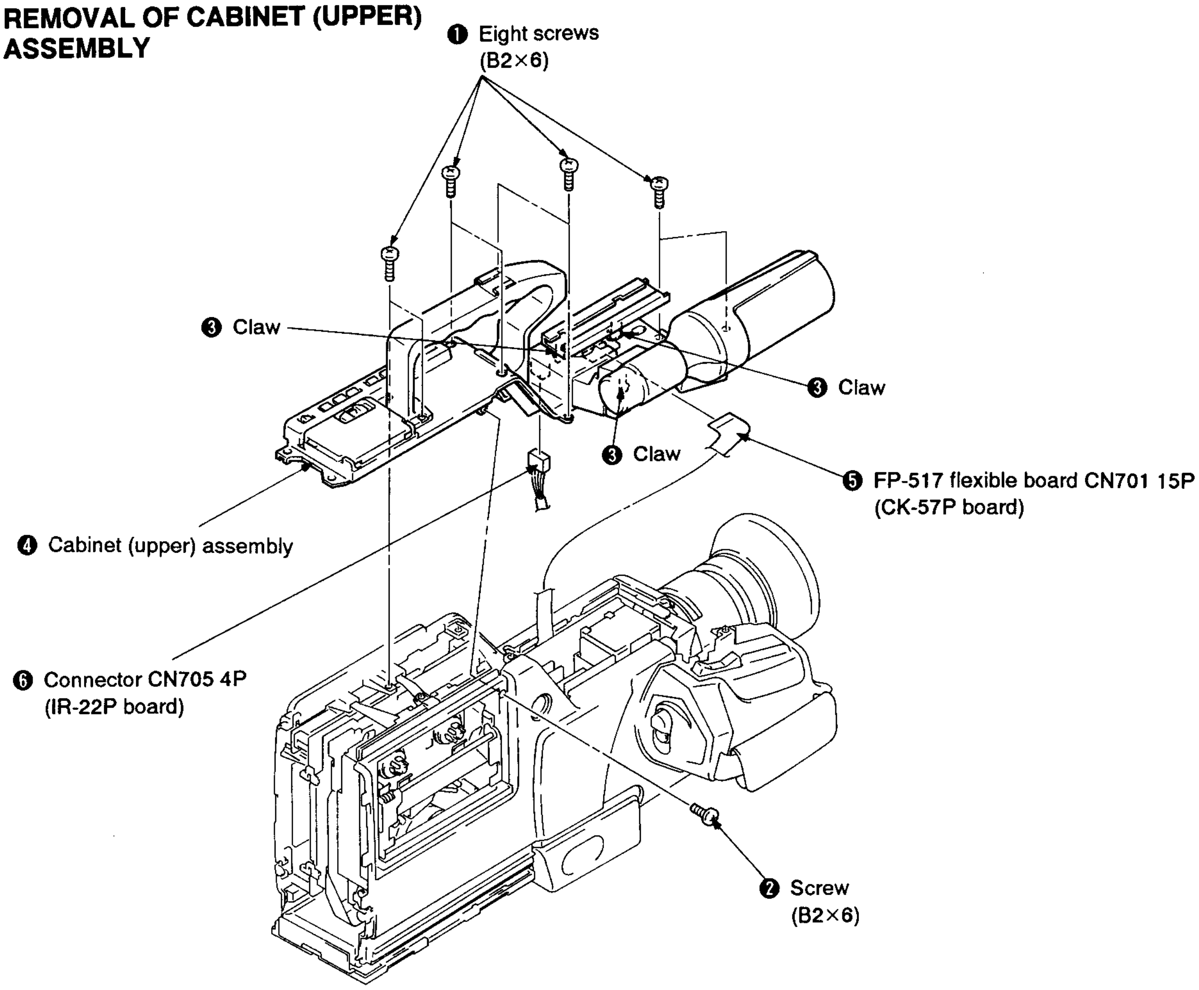
Connector 4P (CAM DC-DC Converter)

Connector CN003 6P (DC-DC Converter)

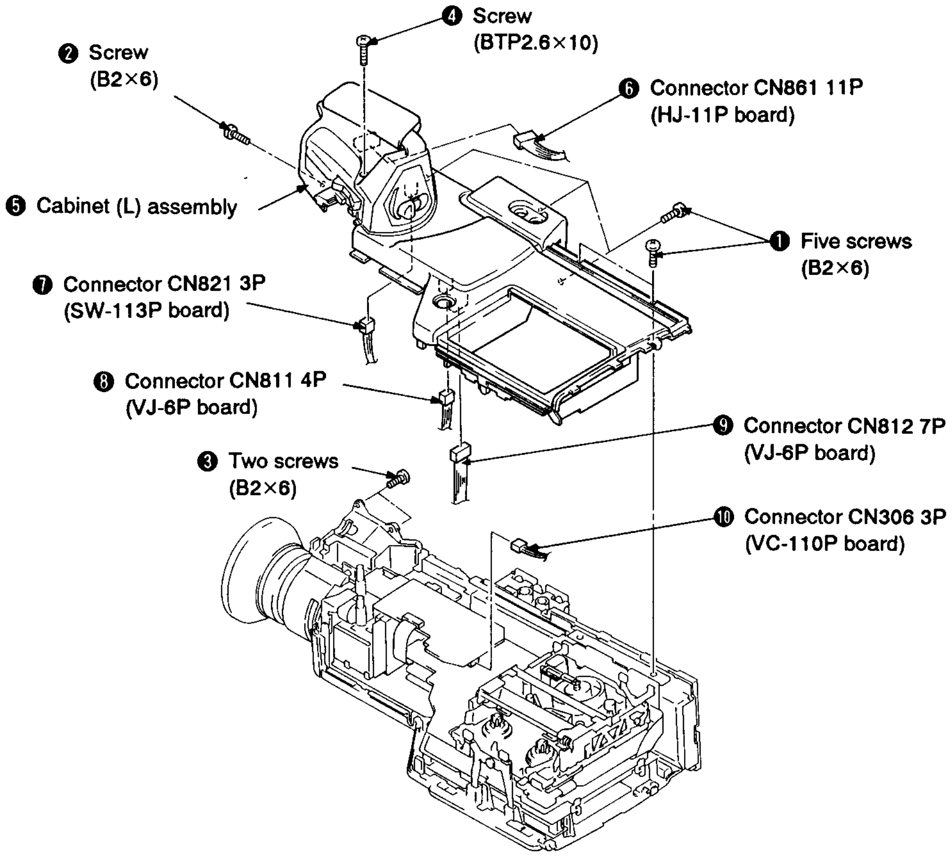
❷ Two screws (BVTT2×6)

Connector CN001 2P (DC-DC Converter)

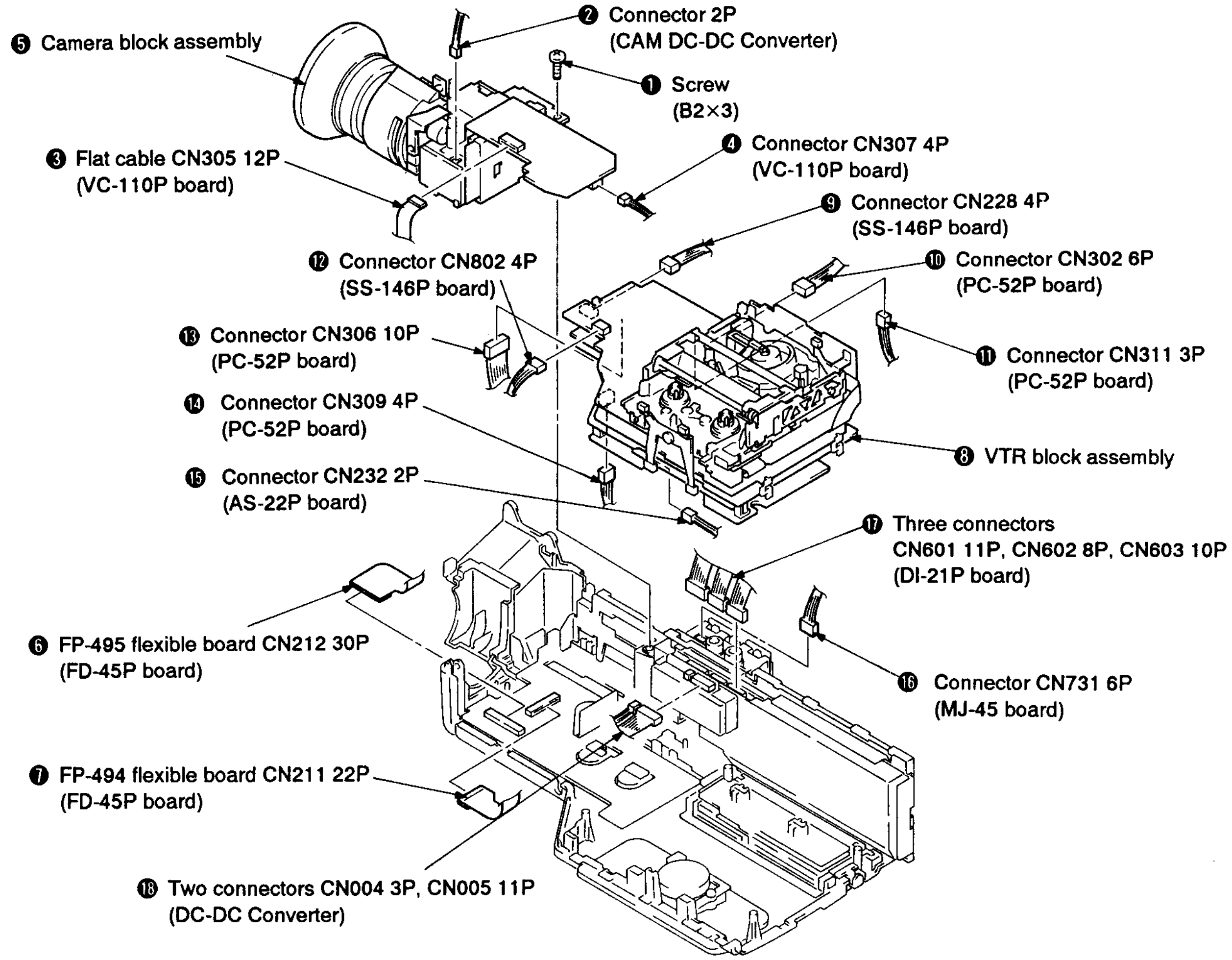
2-4. REMOVAL OF CABINET (UPPER) ASSEMBLY


❶ Eight screws
(B2×6)
❸ Claw
❸ Claw
❸ Claw
❺ FP-517 flexible board CN701 15P
(CK-57P board)
❹ Cabinet (upper) assembly
❻ Connector CN705 4P
(IR-22P board)
❷ Screw
(B2×6)

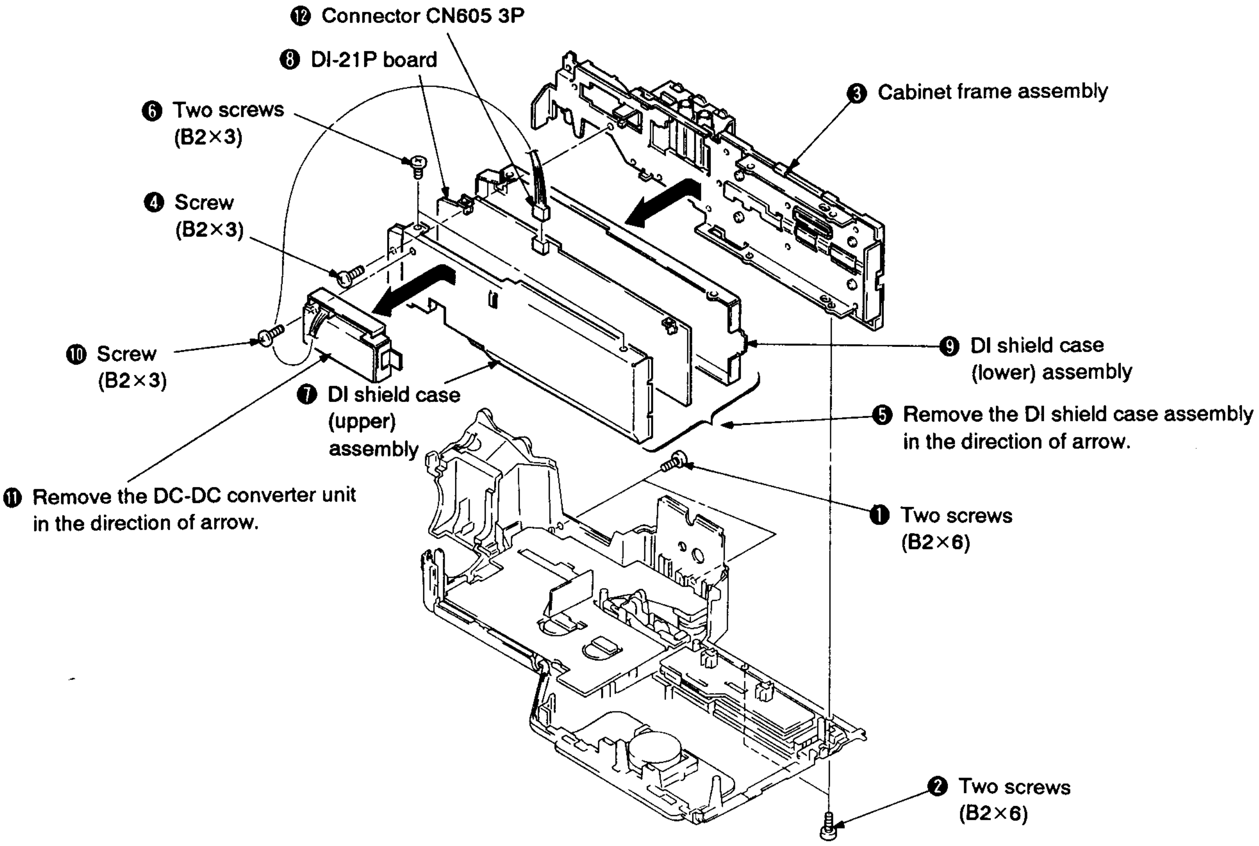
2-5. REMOVAL OF CABINET (L) ASSEMBLY


❹ Screw
(BTP2.6×10)
❷ Screw
(B2×6)
❻ Connector CN861 11P
(HJ-11P board)
❺ Cabinet (L) assembly
❶ Five screws
(B2×6)
❼ Connector CN821 3P
(SW-113P board)
❽ Connector CN811 4P
(VJ-6P board)
❾ Connector CN812 7P
(VJ-6P board)
❸ Two screws
(B2×6)
❿ Connector CN306 3P
(VC-110P board)

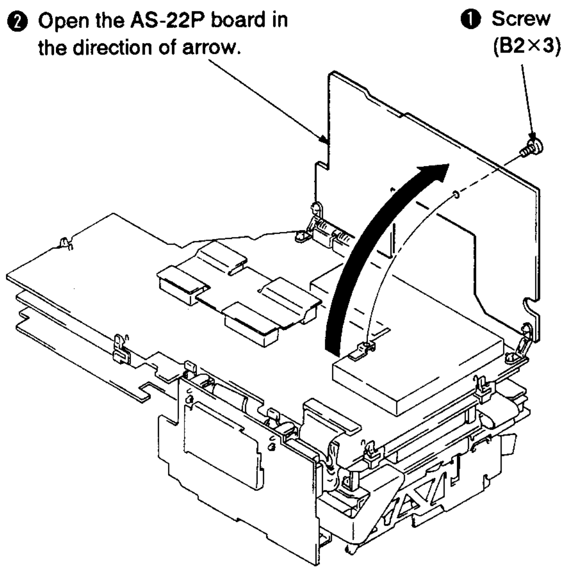
2-6. REMOVAL OF CAMERA BLOCK ASSEMBLY AND VTR BLOCK ASSEMBLY


② Connector 2P (CAM DC-DC Converter)
⑤ Camera block assembly
① Screw (B2×3)
③ Flat cable CN305 12P (VC-110P board)
④ Connector CN307 4P (VC-110P board)
⑨ Connector CN228 4P (SS-146P board)
⑫ Connector CN802 4P (SS-146P board)
⑩ Connector CN302 6P (PC-52P board)
⑬ Connector CN306 10P (PC-52P board)
⑪ Connector CN311 3P (PC-52P board)
⑭ Connector CN309 4P (PC-52P board)
⑧ VTR block assembly
⑮ Connector CN232 2P (AS-22P board)
⑰ Three connectors CN601 11P, CN602 8P, CN603 10P (DI-21P board)
⑥ FP-495 flexible board CN212 30P (FD-45P board)
⑯ Connector CN731 6P (MJ-45 board)
⑦ FP-494 flexible board CN211 22P (FD-45P board)
⑱ Two connectors CN004 3P, CN005 11P (DC-DC Converter)

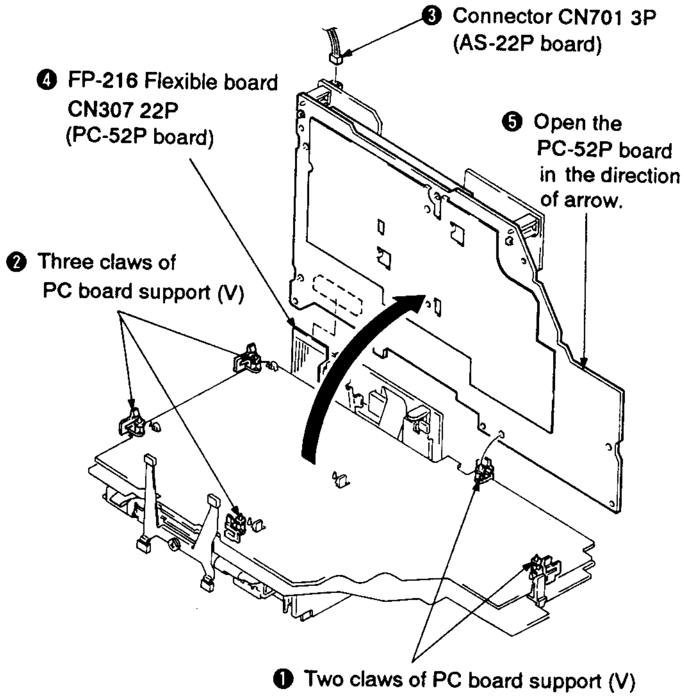
2-7. REMOVAL OF CABINET FRAME ASSEMBLY (DC-DC CONVERTER UNIT)


⑫ Connector CN605 3P
⑧ DI-21P board
⑥ Two screws (B2×3)
③ Cabinet frame assembly
④ Screw (B2×3)
⑩ Screw (B2×3)
⑨ DI shield case (lower) assembly
⑦ DI shield case (upper) assembly
⑤ Remove the DI shield case assembly in the direction of arrow.
⑪ Remove the DC-DC converter unit in the direction of arrow.
① Two screws (B2×6)
② Two screws (B2×6)

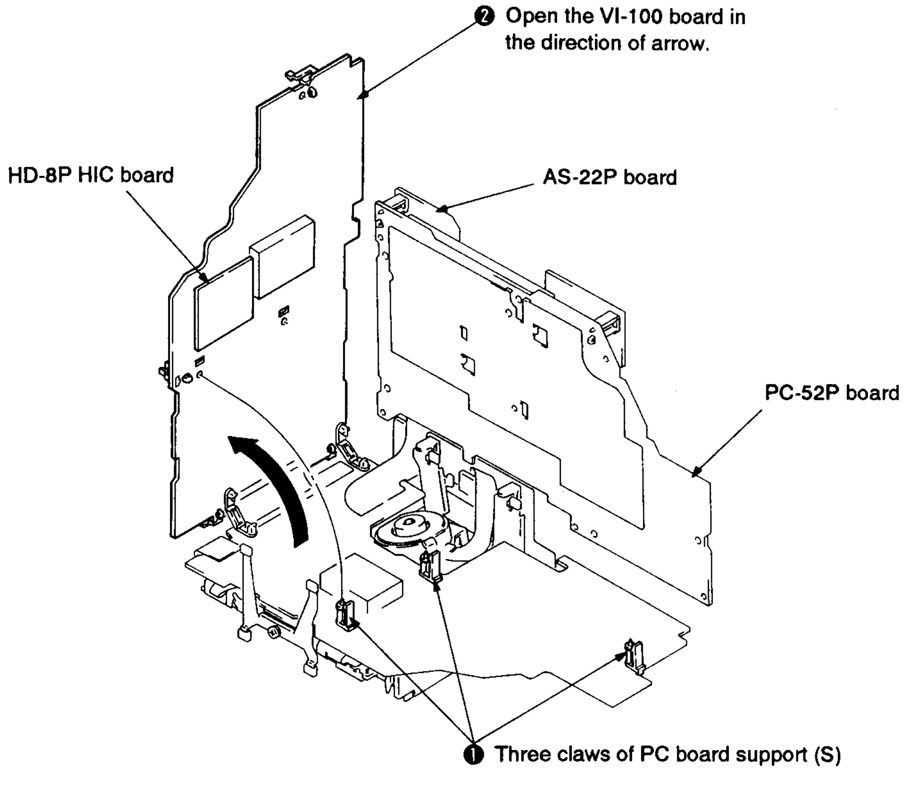
2-8. OPENING OF AS-22P BOARD


❷ Open the AS-22P board in the direction of arrow.
❶ Screw (B2×3)

2-9. OPENING OF PC-52P BOARD

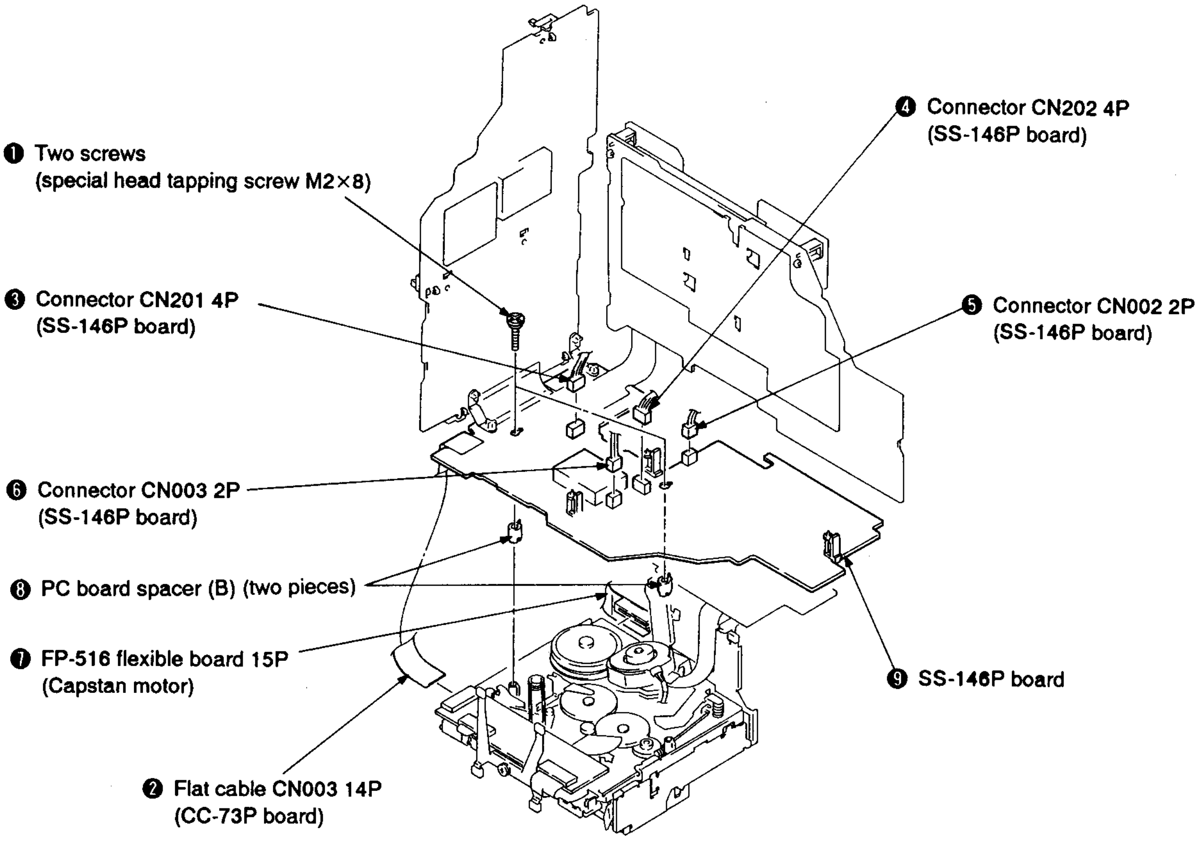

❸ Connector CN701 3P (AS-22P board)
❹ FP-216 Flexible board CN307 22P (PC-52P board)
❺ Open the PC-52P board in the direction of arrow.
❷ Three claws of PC board support (V)
❶ Two claws of PC board support (V)

2-10. OPENING OF VI-100 BOARD

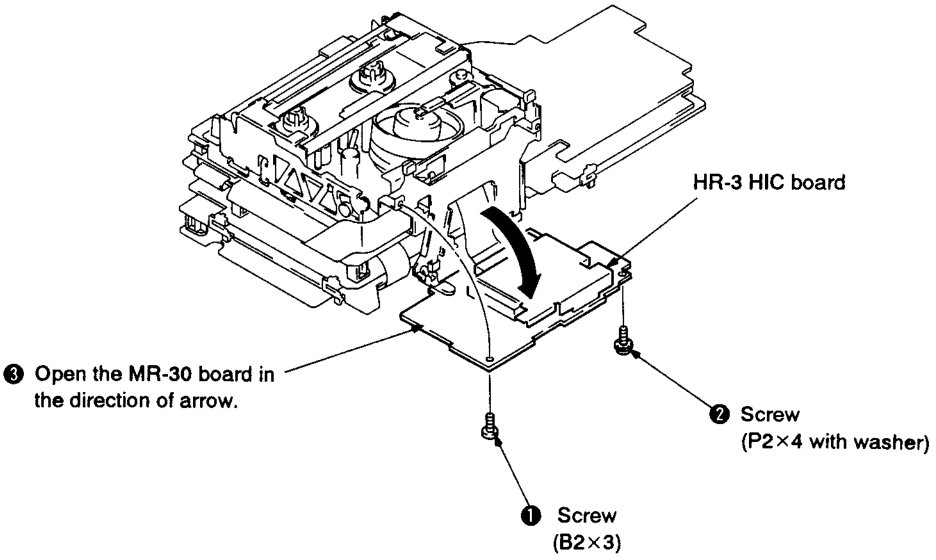

❷ Open the VI-100 board in the direction of arrow.
HD-8P HIC board
AS-22P board
PC-52P board
❶ Three claws of PC board support (S)

2-11. REMOVAL OF SS-146P BOARD

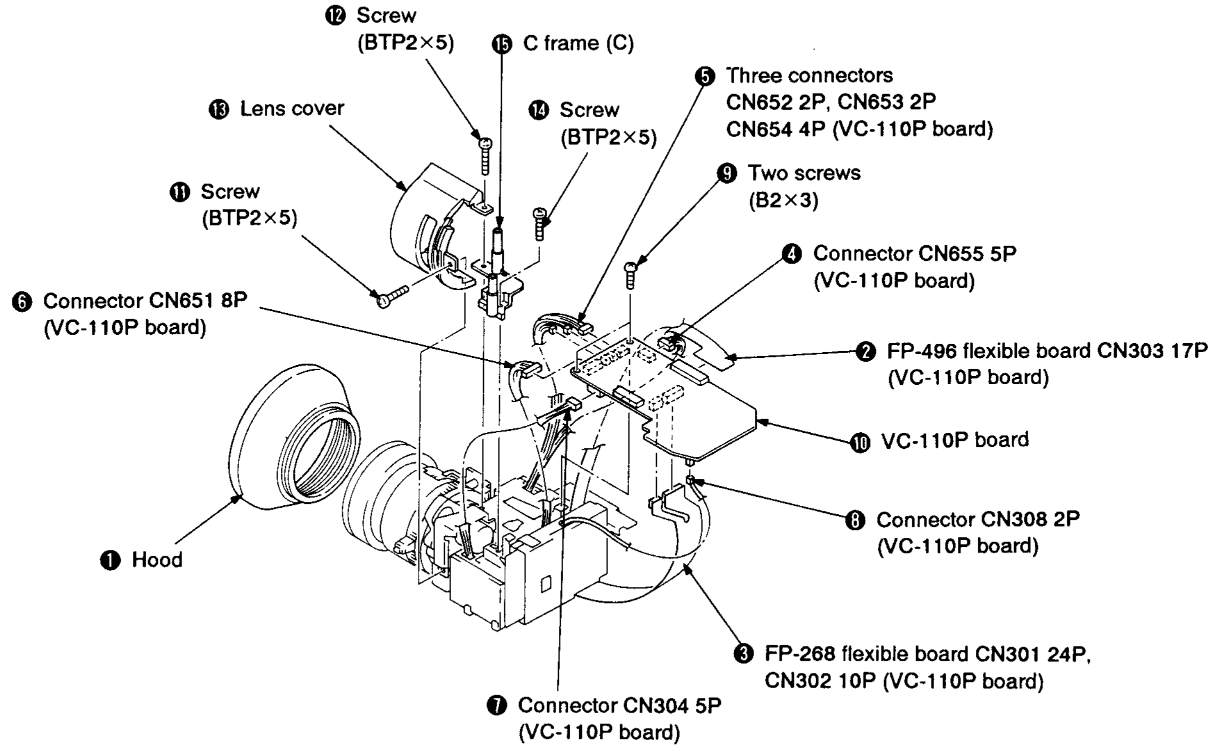
Note: Perform servicing with the MR-30 board open.
(Refer to "2-12. Opening of MR-30 Board".)


❶ Two screws
(special head tapping screw M2×8)
❸ Connector CN201 4P
(SS-146P board)
❻ Connector CN003 2P
(SS-146P board)
❽ PC board spacer (B) (two pieces)
❼ FP-516 flexible board 15P
(Capstan motor)
❷ Flat cable CN003 14P
(CC-73P board)
❹ Connector CN202 4P
(SS-146P board)
❺ Connector CN002 2P
(SS-146P board)
❾ SS-146P board

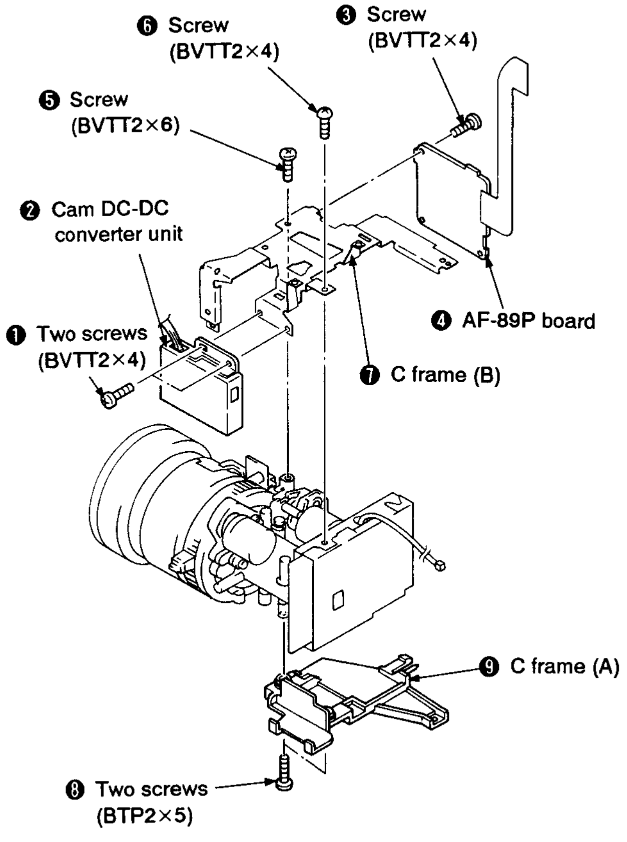
2-12. OPENING OF MR-30 BOARD


HR-3 HIC board
❸ Open the MR-30 board in
the direction of arrow.
❷ Screw
(P2×4 with washer)
❶ Screw
(B2×3)

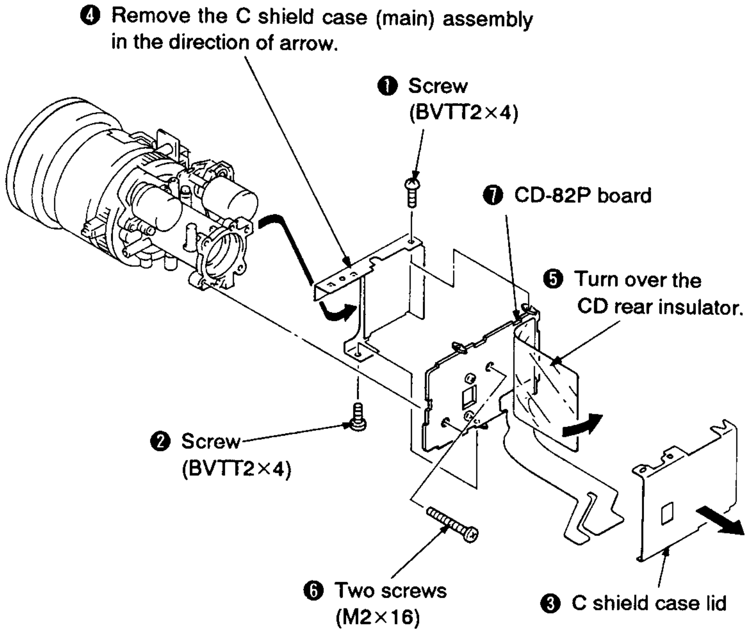
2-13. REMOVAL OF VC-110P BOARD


⓬ Screw (BTP2×5)
⓯ C frame (C)
⓭ Lens cover
⓮ Screw (BTP2×5)
❺ Three connectors CN652 2P, CN653 2P CN654 4P (VC-110P board)
❾ Two screws (B2×3)
⓫ Screw (BTP2×5)
❹ Connector CN655 5P (VC-110P board)
❻ Connector CN651 8P (VC-110P board)
❷ FP-496 flexible board CN303 17P (VC-110P board)
❿ VC-110P board
❽ Connector CN308 2P (VC-110P board)
❶ Hood
❸ FP-268 flexible board CN301 24P, CN302 10P (VC-110P board)
❼ Connector CN304 5P (VC-110P board)

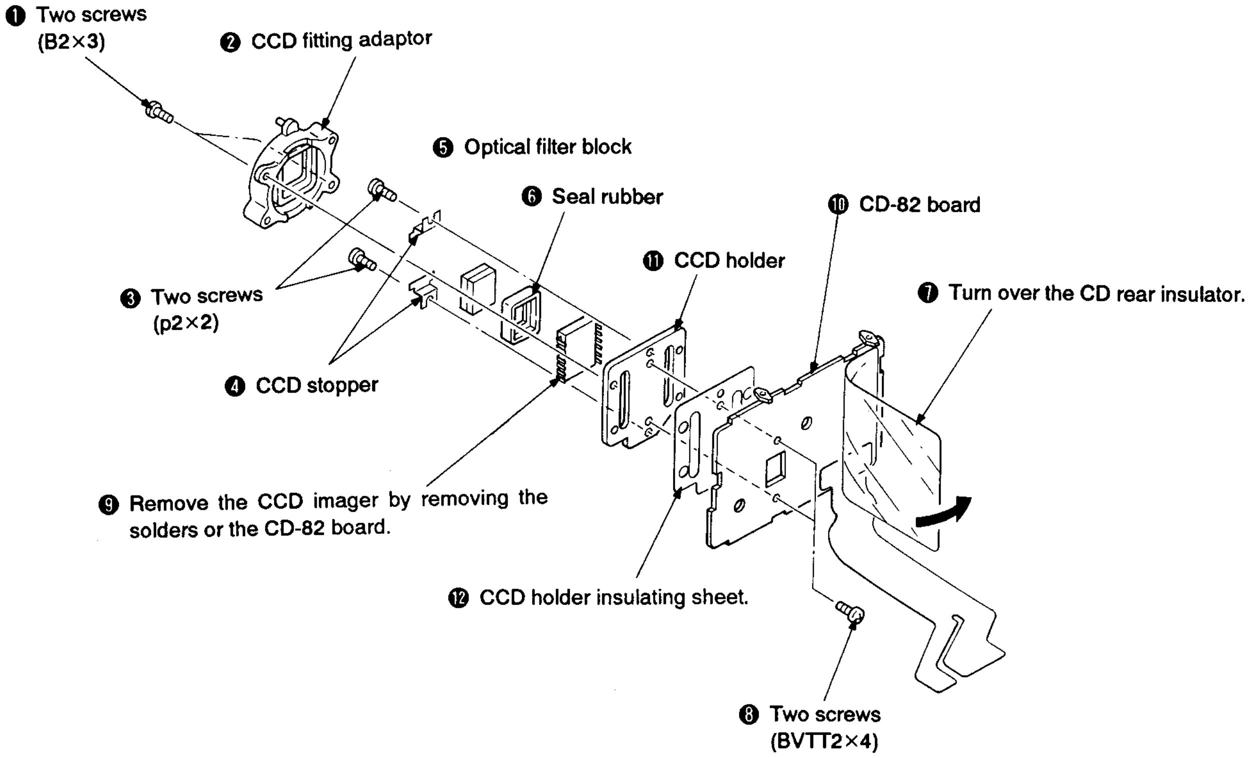
2-14. REMOVAL OF AF-89P BOARD AND CAM DC-DC CONVERTER UNIT


❻ Screw (BVTT2×4)
❸ Screw (BVTT2×4)
❺ Screw (BVTT2×6)
❷ Cam DC-DC converter unit
❶ Two screws (BVTT2×4)
❹ AF-89P board
❼ C frame (B)
❾ C frame (A)
❽ Two screws (BTP2×5)

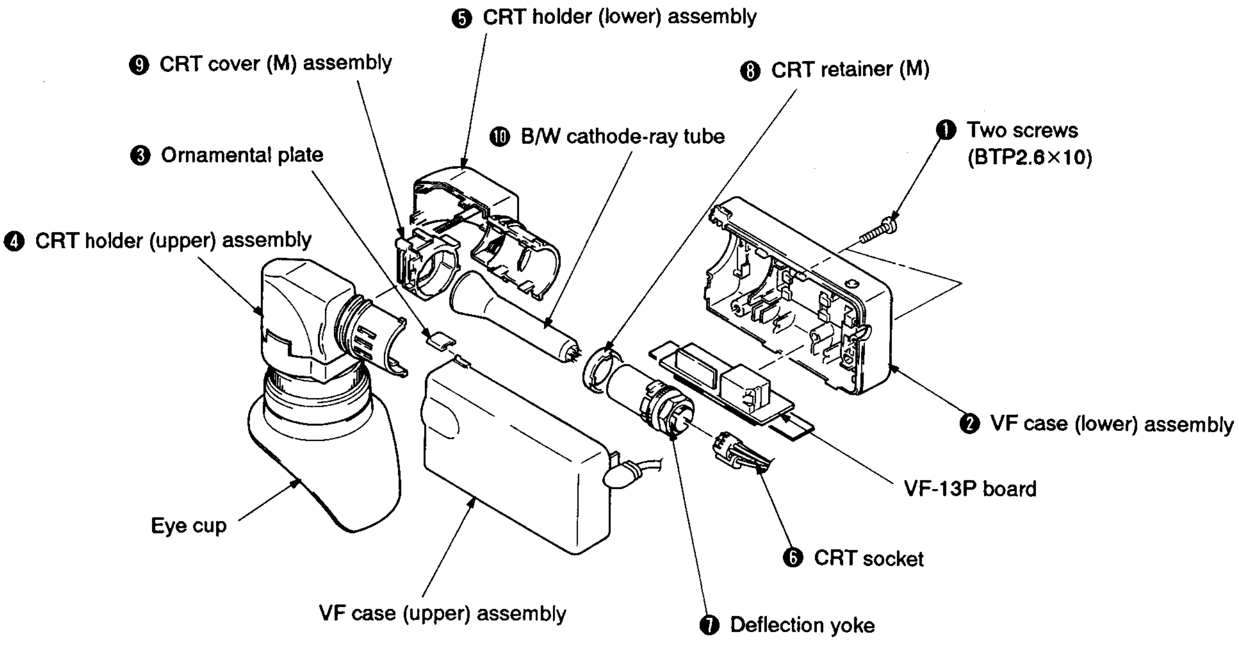
2-15. REMOVAL OF CD-82P BOARD


❹ Remove the C shield case (main) assembly in the direction of arrow.
❶ Screw (BVTT2×4)
❼ CD-82P board
❺ Turn over the CD rear insulator.
❷ Screw (BVTT2×4)
❻ Two screws (M2×16)
❸ C shield case lid

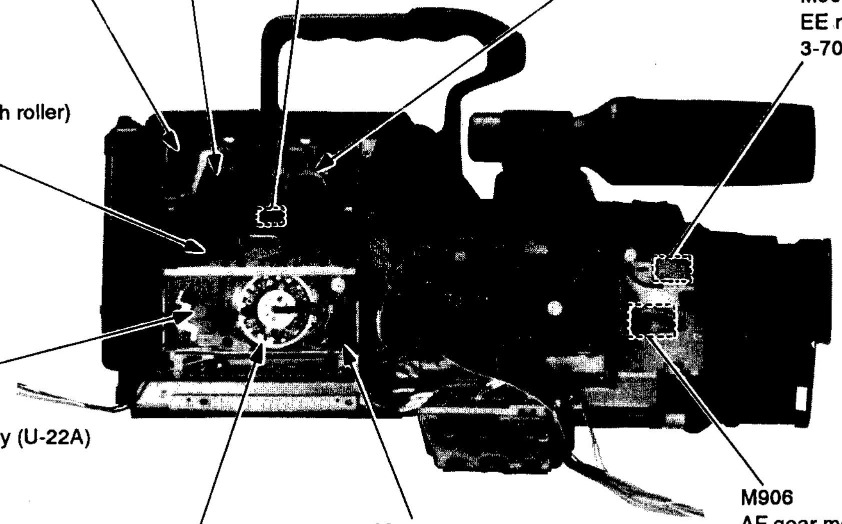
2-16. REMOVAL OF CCD IMAGER


① Two screws (B2×3)
② CCD fitting adaptor
⑤ Optical filter block
⑥ Seal rubber
⑩ CD-82 board
⑪ CCD holder
⑦ Turn over the CD rear insulator.
③ Two screws (p2×2)
④ CCD stopper
⑨ Remove the CCD imager by removing the solders or the CD-82 board.
⑫ CCD holder insulating sheet.
⑧ Two screws (BVTT2×4)

2-17. REMOVAL OF B/W CATHODE-RAY TUBE (EVF ASSEMBLY)

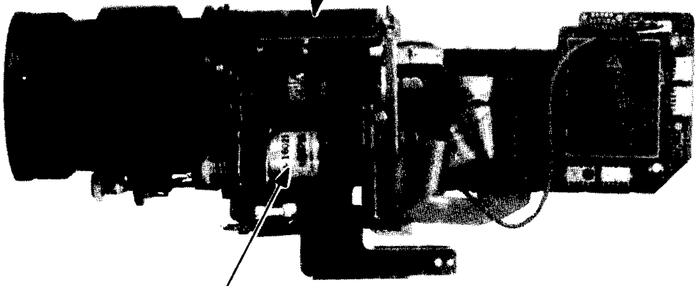

⑤ CRT holder (lower) assembly
⑨ CRT cover (M) assembly
⑧ CRT retainer (M)
③ Ornamental plate
⑩ B/W cathode-ray tube
① Two screws (BTP2.6×10)
④ CRT holder (upper) assembly
② VF case (lower) assembly
VF-13P board
Eye cup
⑥ CRT socket
VF case (upper) assembly
⑦ Deflection yoke

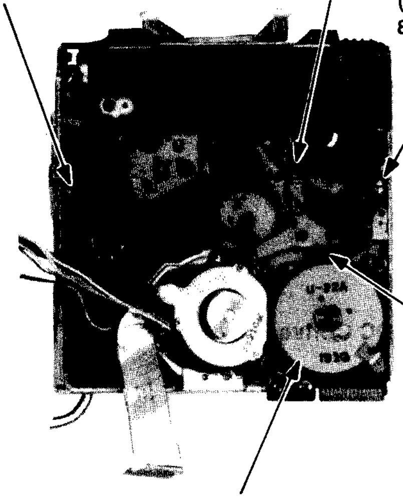
2-18. INTERNAL VIEW


T reel table assembly
X-3728-855-1
Tape top/Tape end LED
(GL453JS)
8-719-026-04
S reel table assembly
X-3728-851-1
RECOG switch
1-572-298-11
M904
EE meter assembly (IRIS)
3-707-816-01
Pinch arm assembly (Pinch roller)
A-7040-219-A
M902
Capstan motor assembly (U-22A)
8-835-331-31
M906
AF gear motor assembly (FOCUS)
3-707-937-01
M903
Loading motor assembly
A-7040-160-A

M901 Drum

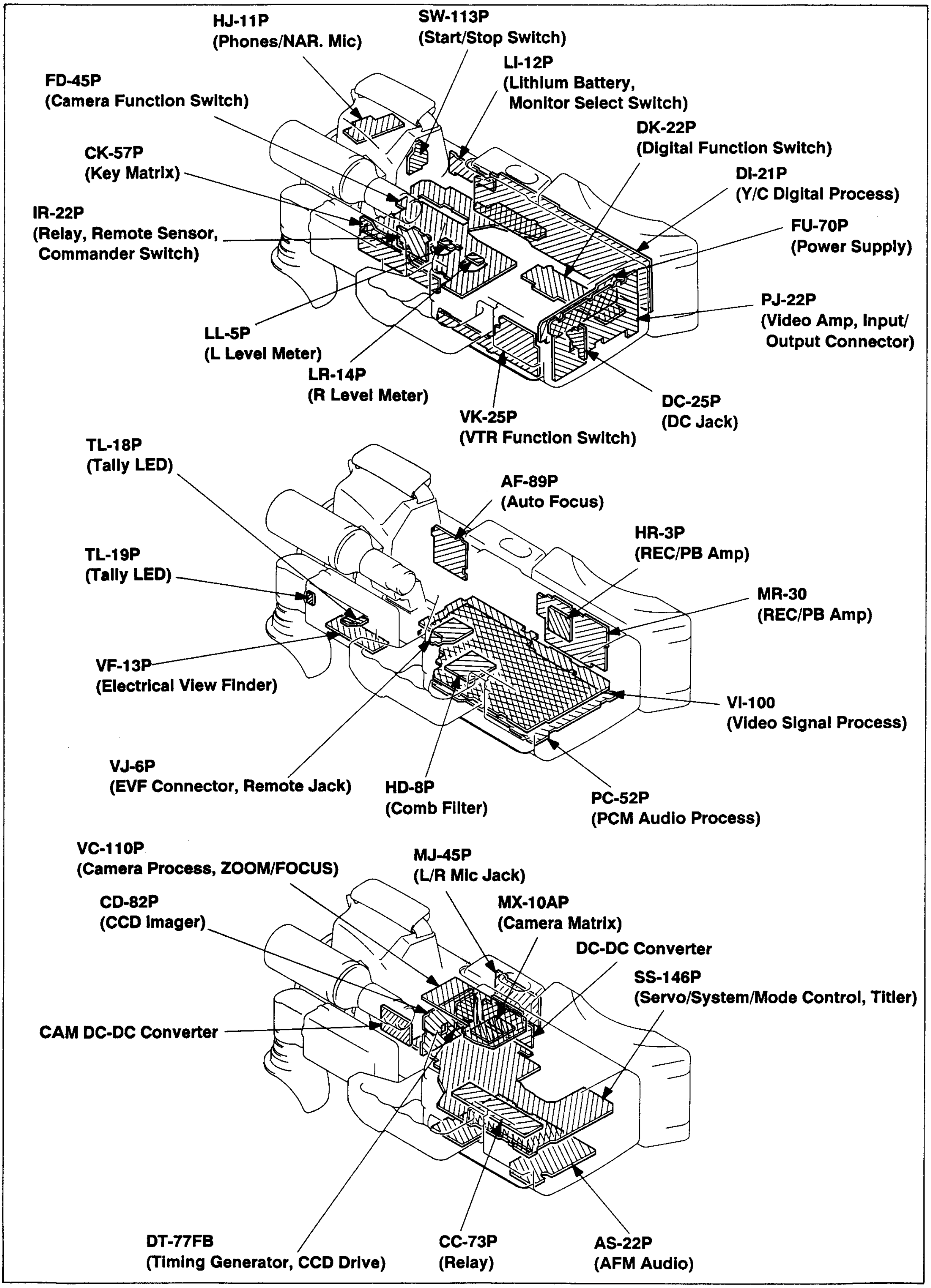
Drum assembly DGU-70A-R	A-7049-387-A
Rotary upper drum assembly DGR-70-R	A-7048-327-A


CAM DC-DC converter unit
1-466-230-21
M905
AF gear motor assembly (Zoom)
3-708-304-01

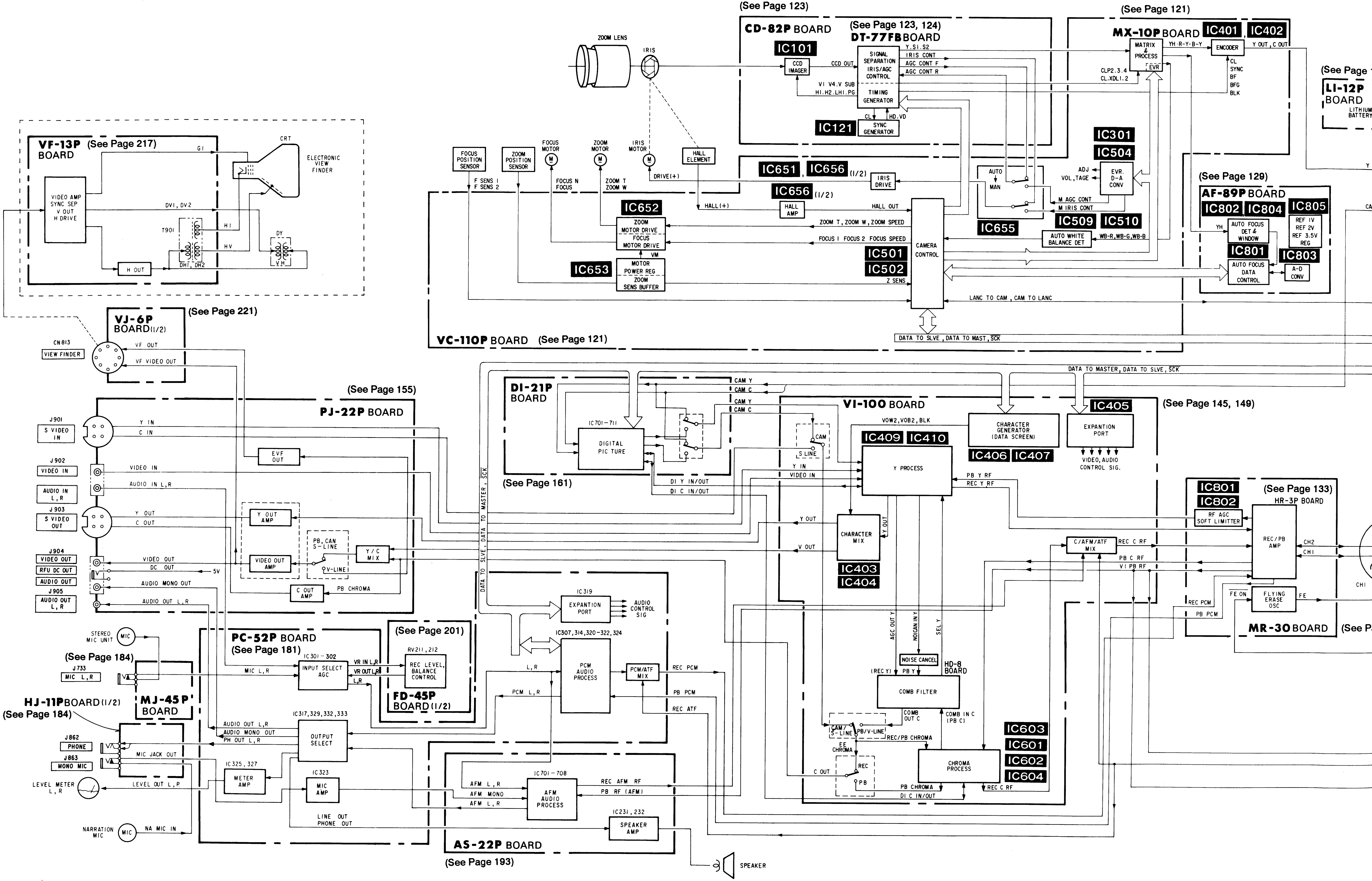

Timing belt (S)
3-728-866-11
Tape end sensor
(EE -TP109)
8-729-906-48
Tape top sensor
(EE-TP109)
8-729-906-48
Timing belt (L)
3-741-197-01
M902
Capstan motor assembly (U-22A)
8-835-331-01

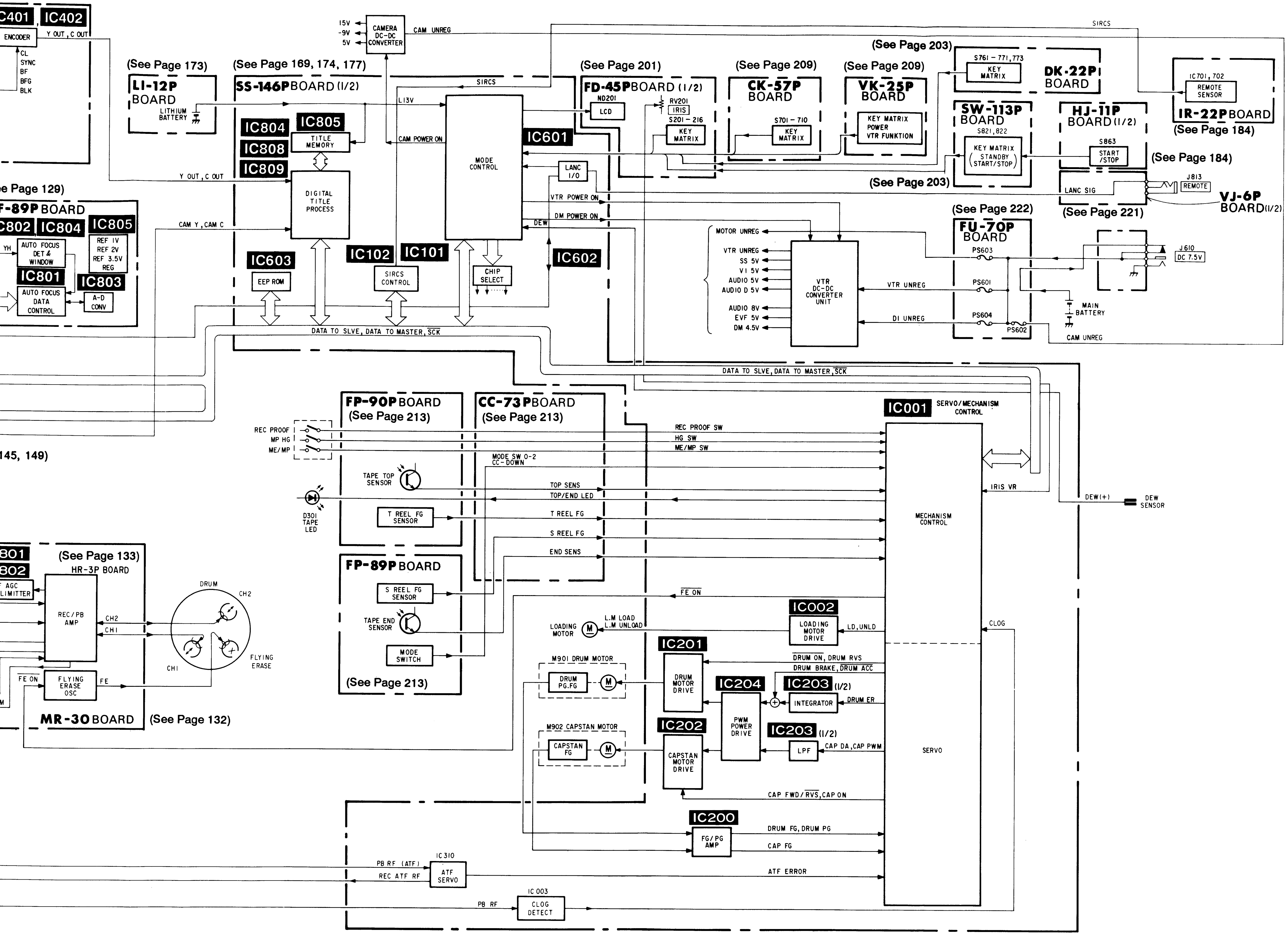
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

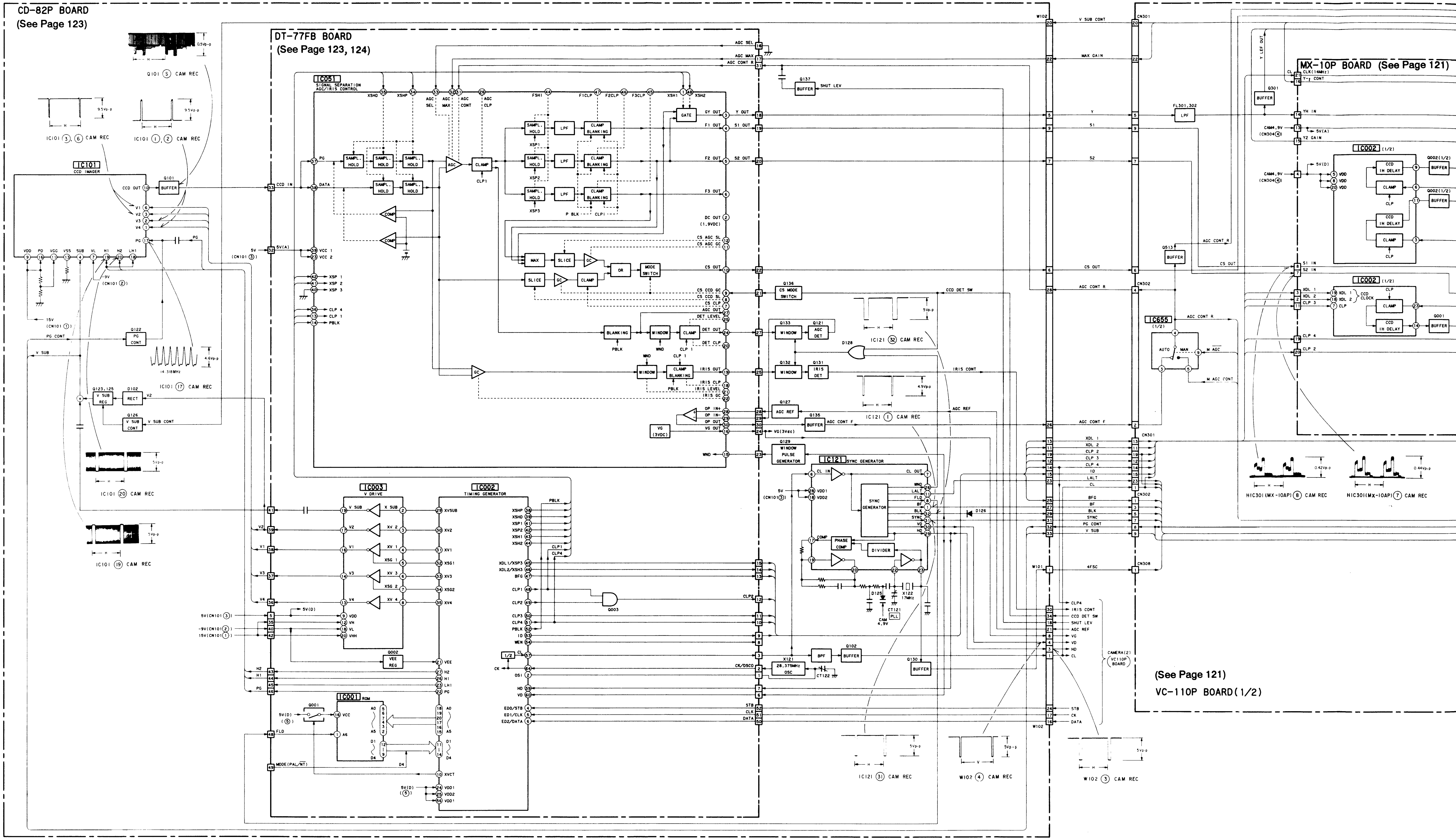

HJ-11P
(Phones/NAR. Mic)
SW-113P
(Start/Stop Switch)
LI-12P
(Lithium Battery,
Monitor Select Switch)
FD-45P
(Camera Function Switch)
DK-22P
(Digital Function Switch)
CK-57P
(Key Matrix)
DI-21P
(Y/C Digital Process)
IR-22P
(Relay, Remote Sensor,
Commander Switch)
FU-70P
(Power Supply)
PJ-22P
(Video Amp, Input/
Output Connector)
LL-5P
(L Level Meter)
LR-14P
(R Level Meter)
DC-25P
(DC Jack)
VK-25P
(VTR Function Switch)
TL-18P
(Tally LED)
AF-89P
(Auto Focus)
HR-3P
(REC/PB Amp)
TL-19P
(Tally LED)
MR-30
(REC/PB Amp)
VF-13P
(Electrical View Finder)
VI-100
(Video Signal Process)
VJ-6P
(EVF Connector, Remote Jack)
HD-8P
(Comb Filter)
PC-52P
(PCM Audio Process)
VC-110P
(Camera Process, ZOOM/FOCUS)
MJ-45P
(L/R Mic Jack)
CD-82P
(CCD Imager)
MX-10AP
(Camera Matrix)
DC-DC Converter
SS-146P
(Servo/System/Mode Control, Titler)
CAM DC-DC Converter
DT-77FB
(Timing Generator, CCD Drive)
CC-73P
(Relay)
AS-22P
(AFM Audio)

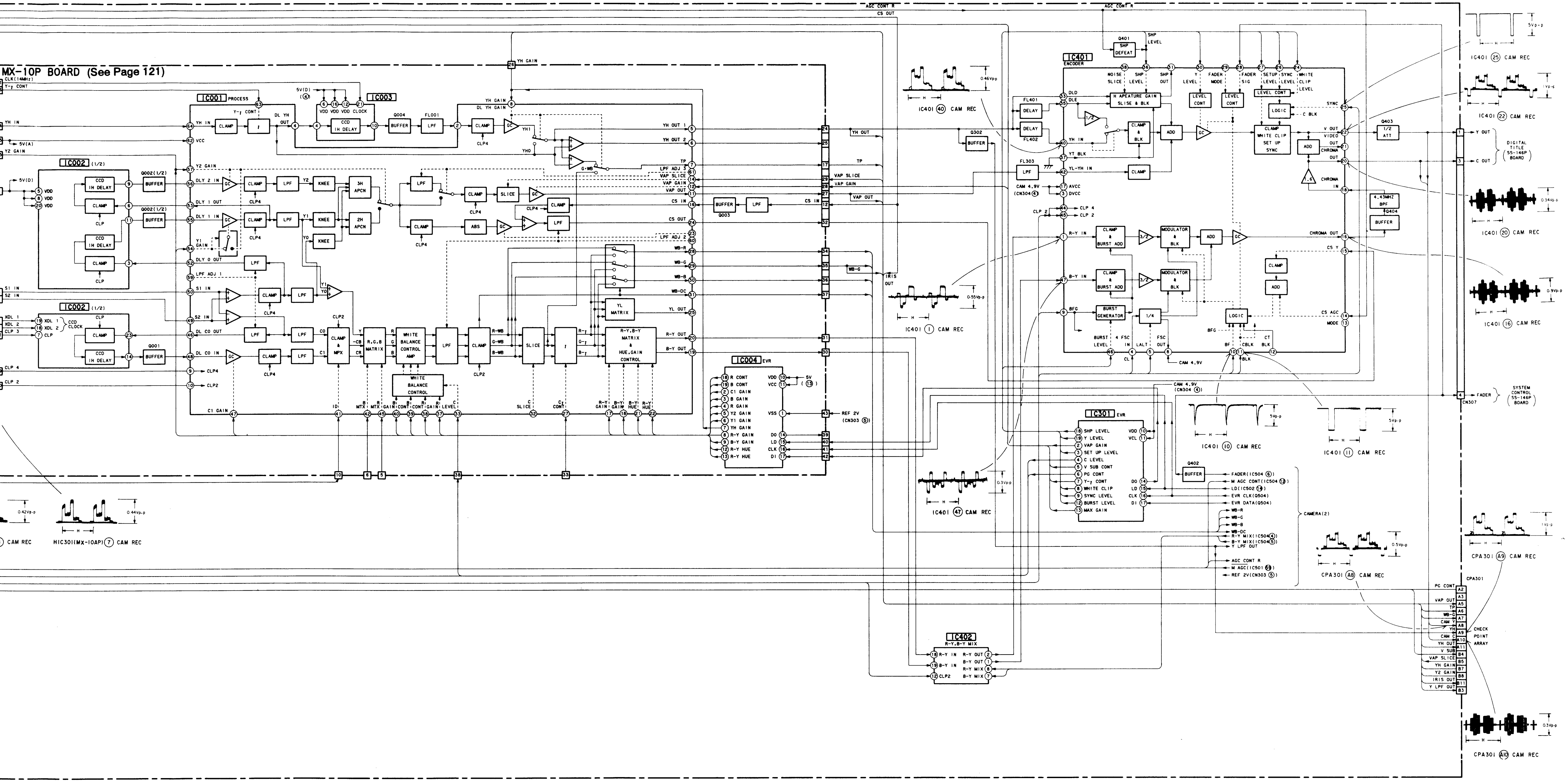
3-2. OVERALL BLOCK DIAGRAM


(See Page 123)
CD-82P BOARD
(See Page 123, 124)
DT-77FB BOARD
IC101
CCD IMAGER
CCD OUT
SIGNAL SEPARATION IRIS/AGC CONTROL
Y.S1.S2
IRIS CONT
AGC CONT F
AGC CONT R
V1 V4.V SUB
H1.H2.LH1.PG
TIMING GENERATOR
CL
HD.VD
IC121
SYNC GENERATOR
(See Page 121)
MX-10P BOARD
IC401
IC402
MATRIX & PROCESS
EVR
YH·R-Y·B-Y
ENCODER
Y OUT, C OUT
CLP2.3.4
CL.XDL1.2
CL
SYNC
BF
BFG
BLK
(See Page
LI-12P
BOARD
LITHIUM BATTERY
ZOOM LENS
IRIS
FOCUS POSITION SENSOR
ZOOM POSITION SENSOR
FOCUS MOTOR
ZOOM MOTOR
IRIS MOTOR
HALL ELEMENT
F SENS 1
F SENS 2
FOCUS N
FOCUS
ZOOM T
ZOOM W
DRIVE(+)
HALL(+)
IC651
IC656 (1/2)
IRIS DRIVE
IC656 (1/2)
HALL AMP
HALL OUT
IC652
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
VM
ZOOM T, ZOOM W, ZOOM SPEED
FOCUS 1 FOCUS 2 FOCUS SPEED
IC653
MOTOR POWER REG
ZOOM SENS BUFFER
Z SENS
CAMERA CONTROL
IC501
IC502
IC655
AUTO
MAN
M AGC CONT
M IRIS CONT
IC301
IC504
ADJ
VOL, TAGE
EVR. D-A CONV
IC509
IC510
AUTO WHITE BALANCE DET
WB-R, WB-G, WB-B
(See Page 129)
AF-89P BOARD
IC802
IC804
IC805
YH
AUTO FOCUS DET & WINDOW
REF 1V
REF 2V
REF 3.5V
REG
IC801
IC803
AUTO FOCUS DATA CONTROL
A-D CONV
LANC TO CAM, CAM TO LANC
DATA TO SLVE, DATA TO MAST, SCK
VC-110P BOARD (See Page 121)
VF-13P (See Page 217)
BOARD
G1
CRT
ELECTRONIC VIEW FINDER
VIDEO AMP
SYNC SEP
V OUT
H DRIVE
DV1, DV2
T901
H1
HV
DY
V H
H OUT
DH1, DH2
VJ-6P
BOARD (1/2)
(See Page 221)
CN813
VIEW FINDER
VF OUT
VF VIDEO OUT
(See Page 155)
PJ-22P BOARD
J901
S VIDEO IN
Y IN
C IN
J902
VIDEO IN
AUDIO IN L, R
VIDEO IN
AUDIO IN L, R
J903
S VIDEO OUT
Y OUT
C OUT
EVF OUT
Y OUT AMP
J904
VIDEO OUT
RFU DC OUT
AUDIO OUT
J905
AUDIO OUT L, R
VIDEO OUT
DC OUT
5V
AUDIO MONO OUT
AUDIO OUT L, R
VIDEO OUT AMP
PB, CAN S-LINE
V-LINE
Y/C MIX
C OUT AMP
PB CHROMA
DATA TO MASTER, SCK
DATA TO SLVE
DI-21P
BOARD
IC701-711
DIGITAL PIC TURE
CAM Y
CAM C
CAM Y
CAM C
DI Y IN/OUT
DI C IN/OUT
(See Page 161)
DATA TO MASTER, DATA TO SLVE, SCK
VI-100 BOARD
(See Page 145, 149)
VOW2, VOB2, BLK
CHARACTER GENERATOR (DATA SCREEN)
IC405
EXPANTION PORT
VIDEO, AUDIO CONTROL SIG.
IC409
IC410
IC406
IC407
CAM
S LINE
Y IN
VIDEO IN
Y PROCESS
PB Y RF
REC Y RF
Y OUT
V OUT
CHARACTER MIX
Y OUT
IC403
IC404
AGC OUT Y
NOICAN IN Y
SEL Y
NOISE CANCEL
HD-8 BOARD
(REC Y)
PB Y
COMB FILTER
COMB OUT C
COMB IN C (PB C)
CAM/S-LINE
PB/V-LINE
REC/PB CHROMA
EE CHROMA
REC
PB
C OUT
CHROMA PROCESS
IC603
IC601
IC602
IC604
PB CHROMA
DI C IN/OUT
REC C RF
C/AFM/ATF MIX
REC C RF
PB C RF
V1 PB RF
IC801
IC802
RF AGC SOFT LIMITTER
(See Page 133)
HR-3P BOARD
REC/PB AMP
CH2
CH1
CH1
REC PCM
PB PCM
FE ON
FLYING ERASE OSC
FE
MR-30 BOARD
(See P
STEREO MIC UNIT
MIC
(See Page 184)
J733
MIC L, R
HJ-11P BOARD (1/2)
(See Page 184)
MJ-45P
BOARD
J862
PHONE
J863
MONO MIC
MIC JACK OUT
LEVEL METER L, R
LEVEL OUT L, P
NARRATION MIC
MIC
NA MIC IN
PC-52P BOARD
(See Page 181)
MIC L, R
IC301-302
INPUT SELECT AGC
VR IN L, R
VR OUT L, R
L, R
(See Page 201)
RV211, 212
REC LEVEL, BALANCE CONTROL
FD-45P
BOARD (1/2)
AUDIO OUT L, R
AUDIO MONO OUT
PH OUT L, R
IC317, 329, 332, 333
OUTPUT SELECT
IC325, 327
METER AMP
IC323
MIC AMP
LINE OUT
PHONE OUT
IC319
EXPANTION PORT
AUDIO CONTROL SIG
IC307, 314, 320-322, 324
L, R
PCM L, R
PCM AUDIO PROCESS
PCM/ATF MIX
REC PCM
PB PCM
REC ATF
AFM L, R
AFM MONO
AFM L, R
IC701-708
AFM AUDIO PROCESS
REC AFM RF
PB RF (AFM)
IC231, 232
SPEAKER AMP
AS-22P BOARD
(See Page 193)
SPEAKER


IC401
IC402
ENCODER
Y OUT, C OUT
CL
SYNC
BF
BFG
BLK
15V
-9V
5V
CAMERA DC-DC CONVERTER
CAM UNREG
SIRCS
(See Page 173)
LI-12P BOARD
LITHIUM BATTERY
(See Page 169, 174, 177)
SS-146P BOARD (1/2)
L13V
IC804
IC805
TITLE MEMORY
IC808
IC809
CAM POWER ON
MODE CONTROL
IC601
Y OUT, C OUT
DIGITAL TITLE PROCESS
e Page 129)
F-89P BOARD
C802
IC804
IC805
REF 1V
REF 2V
REF 3.5V
REG
YH
AUTO FOCUS DET & WINDOW
IC801
AUTO FOCUS DATA CONTROL
IC803
A-D CONV
CAM Y, CAM C
IC603
EEP ROM
IC102
IC101
SIRCS CONTROL
CHIP SELECT
IC602
LANC I/O
VTR POWER ON
DM POWER ON
DEW
DATA TO SLVE, DATA TO MASTER, SCK
(See Page 201)
FD-45P BOARD (1/2)
ND201
LCD
RV201
IRIS
S201 – 216
KEY MATRIX
(See Page 209)
CK-57P BOARD
S701 – 710
KEY MATRIX
(See Page 209)
VK-25P BOARD
KEY MATRIX POWER VTR FUNKTION
(See Page 203)
S761 – 771, 773
KEY MATRIX
DK-22P BOARD
SW-113P BOARD
S821, 822
KEY MATRIX (STANDBY START/STOP)
(See Page 203)
HJ-11P BOARD (1/2)
S863
START /STOP
(See Page 184)
IC701, 702
REMOTE SENSOR
IR-22P BOARD
(See Page 184)
LANC SIG
J813
REMOTE
VJ-6P BOARD (1/2)
(See Page 221)
MOTOR UNREG
VTR UNREG
SS 5V
V1 5V
AUDIO 5V
AUDIO D 5V
AUDIO 8V
EVF 5V
DM 4.5V
VTR DC-DC CONVERTER UNIT
VTR UNREG
DI UNREG
(See Page 222)
FU-70P BOARD
PS603
PS601
PS604
PS602
J610
DC 7.5V
MAIN BATTERY
CAM UNREG
DATA TO SLVE, DATA TO MASTER, SCK
145, 149)
FP-90P BOARD
(See Page 213)
CC-73P BOARD
(See Page 213)
REC PROOF
MP HG
ME/MP
REC PROOF SW
HG SW
ME/MP SW
MODE SW 0-2
CC-DOWN
TAPE TOP SENSOR
TOP SENS
TOP/END LED
D301 TAPE LED
T REEL FG SENSOR
T REEL FG
S REEL FG
END SENS
IC001
SERVO/MECHANISM CONTROL
MECHANISM CONTROL
IRIS VR
DEW(+)
DEW SENSOR
FP-89P BOARD
S REEL FG SENSOR
TAPE END SENSOR
MODE SWITCH
(See Page 213)
FE ON
LOADING MOTOR
L.M LOAD
L.M UNLOAD
IC002
LOADING MOTOR DRIVE
LD, UNLD
CLOG
801
802
(See Page 133)
HR-3P BOARD
AGC LIMITTER
REC/PB AMP
CH2
CH1
DRUM
CH2
CH1
FLYING ERASE
FE ON
FLYING ERASE OSC
FE
MR-30 BOARD
(See Page 132)
M901 DRUM MOTOR
DRUM PG.FG
IC201
DRUM MOTOR DRIVE
DRUM ON, DRUM RVS
DRUM BRAKE, DRUM ACC
IC204
PWM POWER DRIVE
IC203 (1/2)
INTEGRATOR
DRUM ER
M902 CAPSTAN MOTOR
CAPSTAN FG
IC202
CAPSTAN MOTOR DRIVE
IC203 (1/2)
LPF
CAP DA, CAP PWM
SERVO
CAP FWD/RVS, CAP ON
IC200
FG/PG AMP
DRUM FG, DRUM PG
CAP FG
IC310
PB RF (ATF)
REC ATF RF
ATF SERVO
ATF ERROR
IC003
PB RF
CLOG DETECT

3-3. CAMERA (1) BLOCK DIAGRAM


CD-82P BOARD
(See Page 123)
DT-77FB BOARD
(See Page 123, 124)
MX-10P BOARD (See Page 121)
(See Page 121)
VC-110P BOARD(1/2)
IC101 CCD IMAGER
IC051 SIGNAL SEPARATION AGC/IRIS CONTROL
IC003 V DRIVE
IC002 TIMING GENERATOR
IC001 ROM
IC121 SYNC GENERATOR
IC002 (1/2)
IC655 (1/2)
Q101 BUFFER
Q122 PG CONT
Q123,125 V SUB REG
D102 RECT
Q126 V SUB CONT
Q137 BUFFER
Q136 CS MODE SWITCH
Q133 WINDOW
Q121 AGC DET
Q132 WINDOW
Q131 IRIS DET
Q127 AGC REF
Q135 BUFFER
Q129 WINDOW PULSE GENERATOR
Q102 BUFFER
Q130 BUFFER
Q002 VEE REG
Q003
Q001
Q301 BUFFER
Q513 BUFFER
FL301,302 LPF
SAMPL. HOLD
LPF
CLAMP BLANKING
AGC
CLAMP
GATE
COMP
MAX
SLICE
GC
OR
MODE SWITCH
BLANKING
WINDOW
SYNC GENERATOR
PHASE COMP
DIVIDER
BPF
X121 28.375MHz OSC
X122 17MHz
CCD 1H DELAY
AUTO MAN
Q101 ⑤ CAM REC
IC101 ③,⑥ CAM REC
IC101 ①,② CAM REC
IC101 ⑰ CAM REC
IC101 ⑳ CAM REC
IC101 ⑲ CAM REC
IC121 ㉜ CAM REC
IC121 ① CAM REC
IC121 ㉛ CAM REC
W102 ④ CAM REC
W102 ③ CAM REC
HIC301 (MX-10AP) ⑧ CAM REC
HIC301 (MX-10AP) ⑦ CAM REC
0.5Vp-p
9.5Vp-p
4.4Vp-p
14.318MHz
5Vp-p
4.9Vp-p
0.42Vp-p
0.44Vp-p
H
V
V SUB CONT
MAX GAIN
AGC SEL
AGC MAX
AGC CONT R
SHUT LEV
Y OUT
S1 OUT
S2 OUT
CS OUT
CCD DET SW
IRIS CONT
AGC REF
AGC CONT F
VG (3VDC)
WND
XDL 1
XDL 2
CLP 2
CLP 3
CLP 4
ID
LALT
CL
BFG
BF
BLK
SYNC
PG CONT
V SUB
4FSC
CLP4
IRIS CONT
CCD DET SW
SHUT LEV
AGC REF
VG
VD
HD
CL
STB
CK
DATA
CAMERA(2) VC110P BOARD
W101
W102
CN301
CN302
CN308
5V(CN101③)
-9V(CN101②)
15V(CN101①)
CAM 4.9V
XSUB
XV2
XV1
XSG1
XV3
XSG2
XV4
XSHP
XSHD
XSP1
XSP2
XSH1
XSH2
XDL1/XSP3
XDL2/XSH3
BFG
CLP1
CLP2
CLP3
CLP4
PBLK
ID
WEN
OS1
HD
VD
ED0/STB
ED1/CLK
ED2/DATA
MODE(PAL/NT)
FLD
YH IN
Y2 GAIN
S1 IN
S2 IN
M AGC
M AGC CONT
Y LEF OUT
Y-1 CONT
CLK(14MHz)


MX-10P BOARD (See Page 121)
IC001 PROCESS
IC002 (1/2)
IC002 (1/2)
IC003
IC004 EVR
IC301 EVR
IC401 ENCODER
IC402 R-Y, B-Y MIX
CLK (14MHz)
Y-γ CONT
YH IN
5V(A)
Y2 GAIN
5V(D)
VDD
CCD 1H DELAY
CLAMP
CLP
BUFFER
Q002(1/2)
Q001
Q004
Q003
Q302
Q401
Q402
Q403
Q404
FL001
FL303
FL401
FL402
LPF
KNEE
3H APCN
2H APCN
GC
SLICE
ABS
γ
CLAMP & MPX
R.G.B MATRIX
WHITE BALANCE CONTROL AMP
WHITE BALANCE CONTROL
YL MATRIX
R-Y, B-Y MATRIX & HUE, GAIN CONTROL
G-WB
YH GAIN
DL YH GAIN
YH OUT 1
YH OUT 2
LPF ADJ 3
VAP SLICE
VAP GAIN
VAP OUT
CS IN
CS OUT
LPF ADJ 2
WB-R
WB-G
WB-B
WB-DC
YL OUT
R-Y OUT
B-Y OUT
C1 GAIN
R CONT
B CONT
C1 GAIN
B GAIN
R GAIN
Y2 GAIN
Y1 GAIN
YH GAIN
R-Y GAIN
B-Y GAIN
R-Y HUE
B-Y HUE
REF 2V (CN303 ⑤)
AGC CONT R
SHP DEFEAT
SHP LEVEL
NOISE SLICE
H APEATURE GAIN SLISE & BLK
DELAY
1/2
ADD
LEVEL CONT
LOGIC
CLAMP WHITE CLIP SET UP SYNC
1/2 ATT
4.43MHz BPF
BURST GENERATOR
MODULATOR & BLK
CLAMP & BURST ADD
3/2
1/4
Y OUT
C OUT
DIGITAL TITLE (SS-146P BOARD)
FADER
SYSTEM CONTROL (SS-146P BOARD)
CN307
IC401 ㉕ CAM REC
IC401 ㉒ CAM REC
IC401 ⑳ CAM REC
IC401 ⑯ CAM REC
IC401 ㊵ CAM REC
IC401 ① CAM REC
IC401 ㊼ CAM REC
IC401 ⑩ CAM REC
IC401 ⑪ CAM REC
CPA301 Ⓐ9 CAM REC
CPA301 Ⓐ8 CAM REC
CPA301 Ⓐ10 CAM REC
HIC301(MX-10AP) ⑦ CAM REC
CAM REC
5Vp-p
1Vp-p
0.34Vp-p
0.9Vp-p
0.46Vp-p
0.55Vp-p
0.3Vp-p
0.42Vp-p
0.44Vp-p
0.5Vp-p
0.3Vp-p
SHP LEVEL
Y LEVEL
VAP GAIN
SET UP LEVEL
C LEVEL
V SUB CONT
PG CONT
Y-γ CONT
WHITE CLIP
SYNC LEVEL
BURST LEVEL
MAX GAIN
FADER (IC504 ⑥)
M AGC CONT (IC504 ⑬)
LD (IC502 ⑭)
EVR CLK (Q504)
EVR DATA (Q504)
CAMERA (2)
R-Y MIX (IC504 ④)
B-Y MIX (IC504 ⑤)
Y LPF OUT
AGC CONT R
M AGC (IC501 ㊴)
REF 2V (CN303 ⑤)
CAM 4.9V (CN304 ⑤)
CPA301
PG CONT
VAP OUT
TP
WB-G
CAM Y
YH
CAM C
YH OUT
V SUB
VAP SLICE
YH GAIN
Y2 GAIN
IRIS OUT
Y LPF OUT
CHECK POINT ARRAY

3-4. CAMERA SYSTEM CONTROL VC-110P BOARD IC501 (MC68HC11E9)

[Description]
MC68HC11E9 is a 8-bit one-chip micro computer with a built-in nonvalotile memory (EEPROM). The camera system is controlled by this micro computer. In addition, protocol master control of the LANC communication can be performed.

1. Function

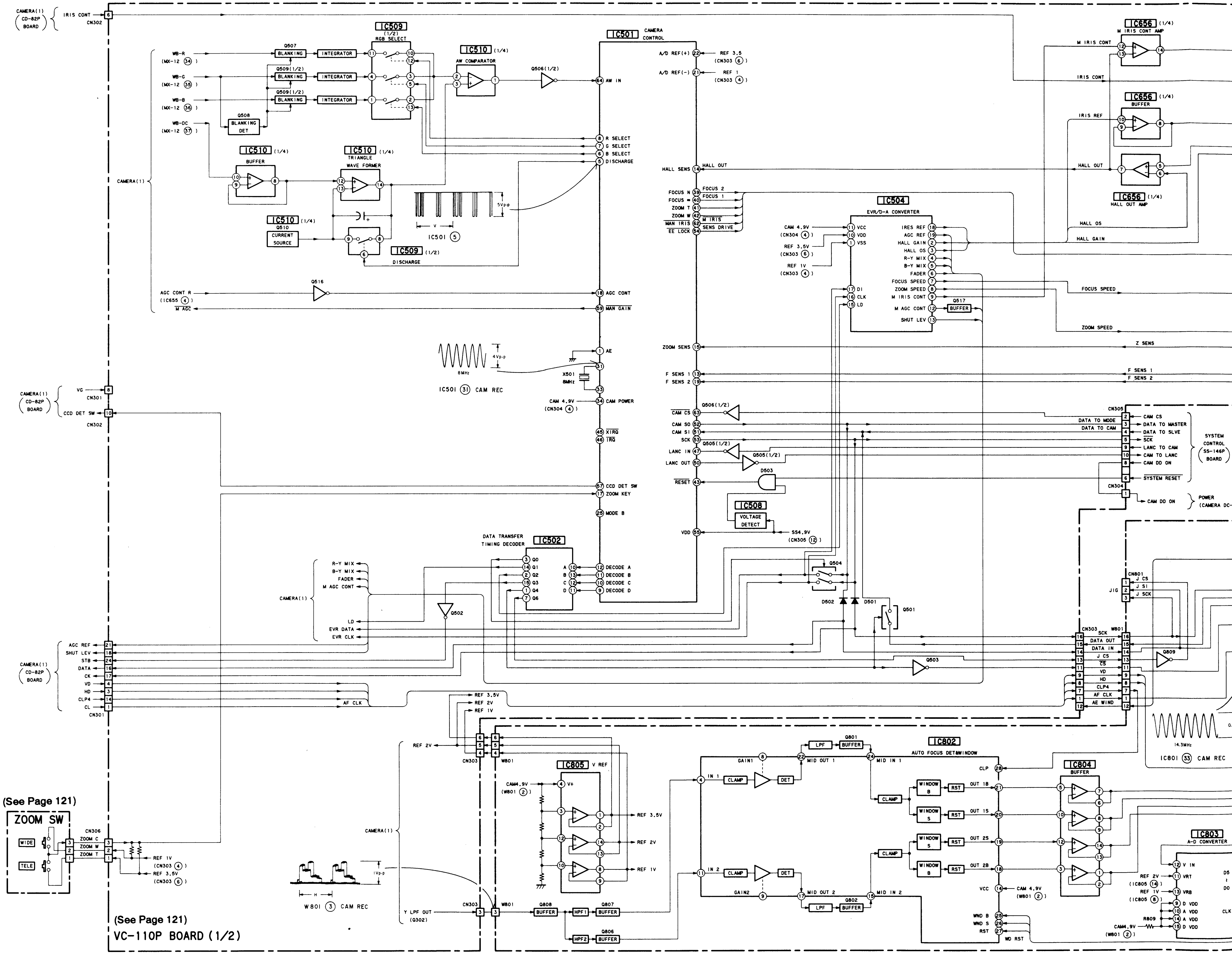
1) EVR Control
2) AWB Control
3) AF Control
4) LANC communication protocol control

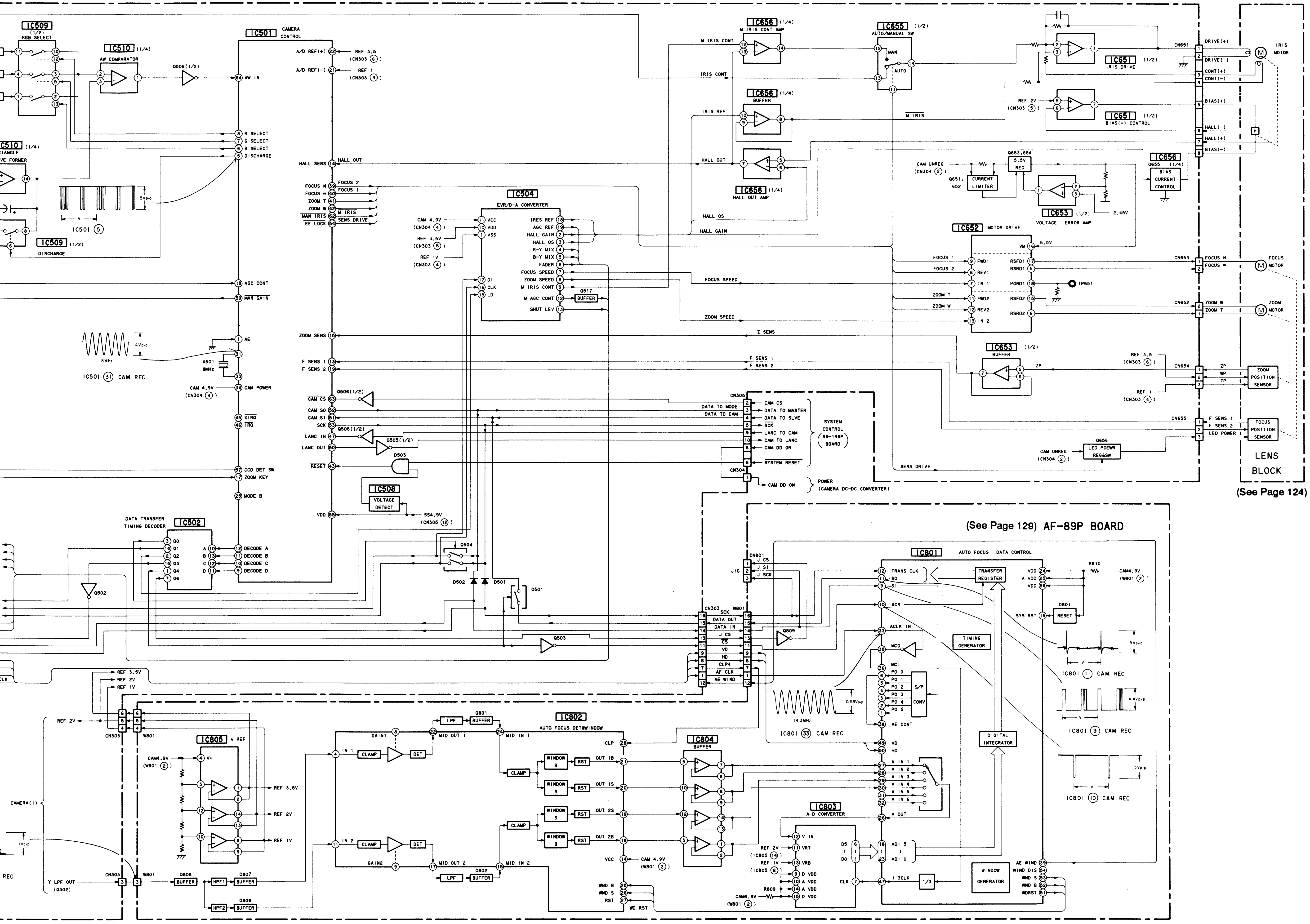
2. Pin Description

Pin No.	Signal Name	I/O	Function
1	AE	I	Not used, Connected to GND
2	NC	–	——
3	NC	–	——
4	NC	–	——
5	DIS CHG	O	AWB. AE Integration-type A/D reset pulse
6	B SELECT	O	AWB Instrumentation line select pulse (blue)
7	G SELECT	O	AWB Instrumentation line select pulse (green)
8	R SELECT	O	AWB Instrumentation line select pulse (red)
9	DECODE D	O	Decode 4 to 10 and expand port with outside IC (4208)
10	DECODE C	O	Decode 4 to 10 and expand port with outside IC (4208)
11	DECODE B	O	Decode 4 to 10 and expand port with outside IC (4208)
12	DECODE A	O	Decode 4 to 10 and expand port with outside IC (4208)
13	F SENS1	I	Focus sensor 1 voltage entrance (Analog input)
14	HALL SENS	I	Hall element voltage input (Analog input)
15	ZOOM SENS	I	Zoom position detection voltage input (Analog input)
16	AN5	I	NC, Not used
17	ZOOM KEY	I	Zoom switch voltage input (Analog input)
18	AGC CONT	I	AGC voltage input (Analog input)
19	F SENS2	I	Focus sensor 2 voltage input (Analog input)
20	AN7	I	NC, Not used
21	A/D REF (–)	–	Built-in A/D converter the minimum standard voltage (Analog input)
22	A/D REF (+)	–	Built-in A/D converter the minimum standard voltage (Analog input)
23	Vss	–	GND
24	Vss	–	GND
25	MODE B	I	Pull up to SS 4.9V
26	NC	–	——
27	MOD A	I	Pull down to GND
28	STR A	–	NC, Not used
29	E	–	NC, Not used
30	STR B	–	NC, Not used
31	EXTAL	O	Built-in inverter output for oscillating element
32	NC	–	——

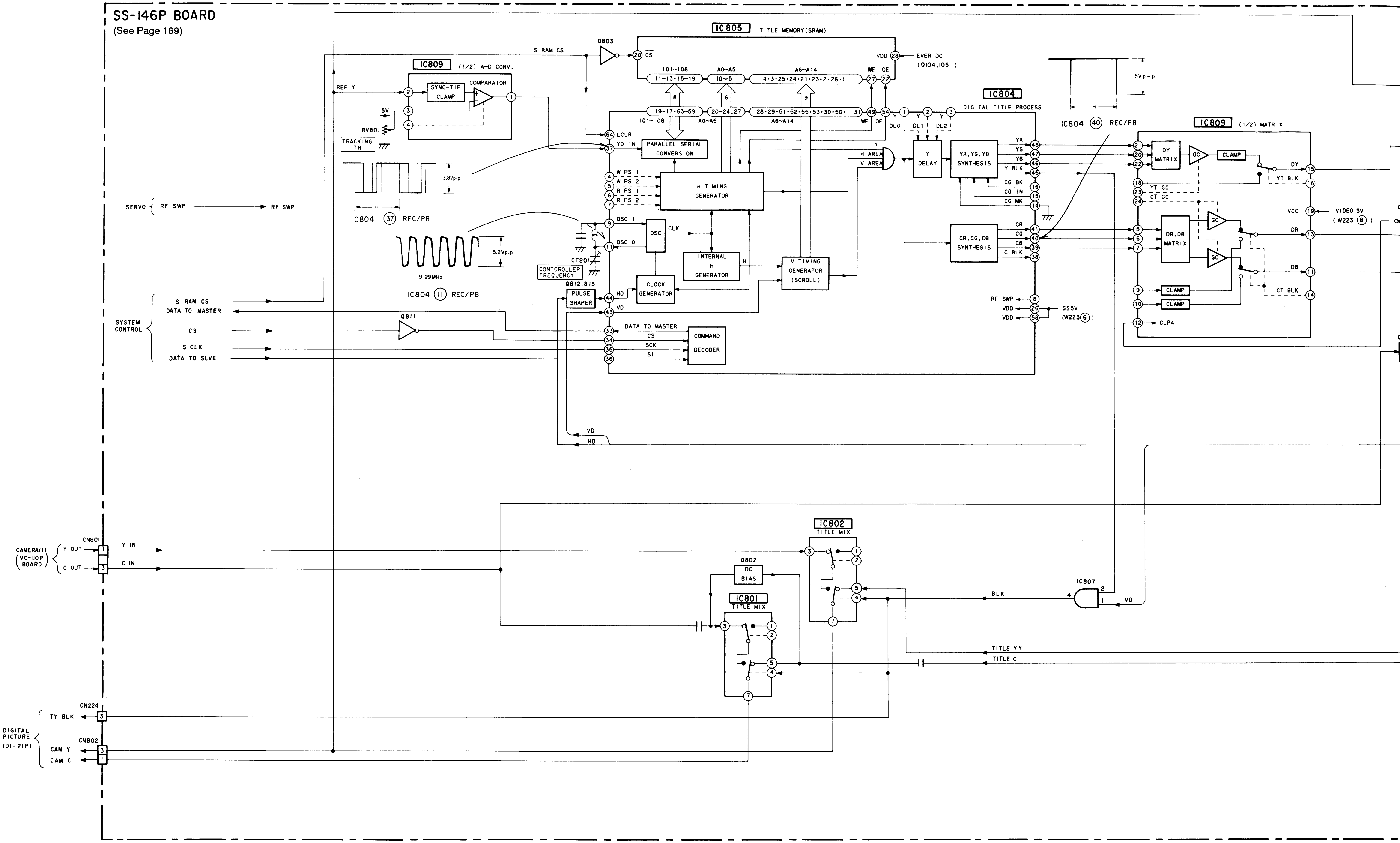
Pin No.	Signal Name	I/O	Function
33	XTAL	I	Built-in inverter input for oscillating element
34	CAM POWER	I	Camera power source rise supervision
35	NC	–	——
36	NORM/$\overline{\text{ADJ}}$	–	NC
37	PC2	I	Pull up to SS 4.9V
38	PC3	–	NC
39	FOCUS N	O	Focus motor N-direction rotaing designation
40	FOCUS ∞	O	Focus motor ∞ -direction rotaing designation
41	ZOOM T	O	Zoom motor T-direction rotaing designation
42	ZOOM W	O	Zoom motor W-direction rotaing designation
43	$\overline{\text{RESET}}$	I	Reset
44	NC	–	——
45	$\overline{\text{XIRQ}}$	I	Pull up tp SS 4.9V
46	$\overline{\text{IRQ}}$	I	Pull up tp SS 4.9V
47	LANC IN	I	LANC input
48	NC	–	——
49	Vss	–	GND
50	LANC OUT	O	LANC output
51	CAM SI	I	Serial data input
52	CAM SO	O	Serial data output
53	SCK	O	Serial clock
54	$\overline{\text{EE LOCK}}$	O	AF sensor Luminous pulse output
55	VDD	–	SS 4.9V
56	FOCUS FG	–	NC
57	PA6	O	CCD DET switch select
58	OC3	–	NC
59	$\overline{\text{MAN GAIN}}$	O	AGC system automatic/manual select
60	NC	–	——
61	NC	–	——
62	$\overline{\text{MAN IRIS}}$	O	IRIS system automatic/manual select
63	$\overline{\text{CAM CS}}$	I	Camera chip select input
64	$\overline{\text{AW IN}}$	I	AWB Integration-type A/D converter comparator input

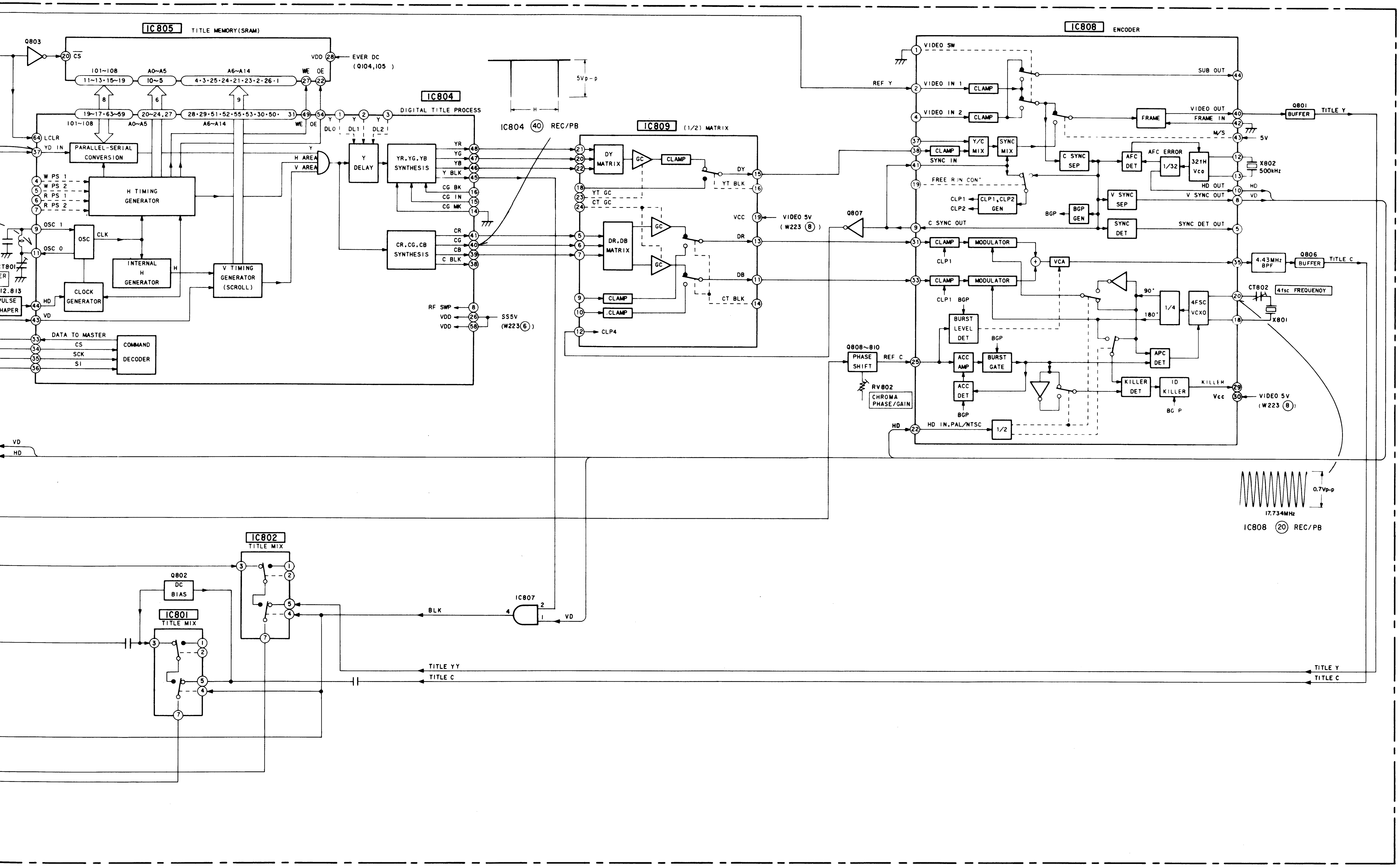
3-5. CAMERA (2) BLOCK DIAGRAM


CAMERA(1) (CD-82P BOARD)
IRIS CONT
CN302
IC509 (1/2) RGB SELECT
IC510 (1/4) AW COMPARATOR
IC501 CAMERA CONTROL
Q507 BLANKING
Q509(1/2) BLANKING
INTEGRATOR
WB-R (MX-12 34)
WB-G (MX-12 35)
WB-B (MX-12 36)
WB-DC (MX-12 37)
Q508 BLANKING DET
Q506(1/2)
AW IN
A/D REF(+)
A/D REF(-)
REF 3.5 (CN303 6)
REF 1 (CN303 4)
IC510 (1/4) BUFFER
IC510 (1/4) TRIANGLE WAVE FORMER
IC510 (1/4) Q510 CURRENT SOURCE
IC509 (1/2) DISCHARGE
5Vp-p
V
IC501 5
R SELECT
G SELECT
B SELECT
DISCHARGE
CAMERA(1)
AGC CONT R (IC655 4)
M AGC
Q516
AGC CONT
MAN GAIN
HALL SENS
HALL OUT
FOCUS N
FOCUS =
ZOOM T
ZOOM W
MAN IRIS
EE LOCK
FOCUS 2
FOCUS 1
M IRIS
SENS DRIVE
IC504 EVR/D-A CONVERTER
CAM 4.9V (CN304 4)
REF 3.5V (CN303 6)
REF 1V (CN303 4)
VCC
VDD
VSS
DI
CLK
LD
IRES REF
AGC REF
HALL GAIN
HALL OS
R-Y MIX
B-Y MIX
FADER
FOCUS SPEED
ZOOM SPEED
M IRIS CONT
M AGC CONT
SHUT LEV
Q517 BUFFER
IC656 (1/4) M IRIS CONT AMP
IC656 (1/4) BUFFER
IC656 (1/4) HALL OUT AMP
M IRIS CONT
IRIS CONT
IRIS REF
HALL OUT
HALL OS
HALL GAIN
FOCUS SPEED
ZOOM SPEED
Z SENS
F SENS 1
F SENS 2
4Vp-p
8MHz
IC501 31 CAM REC
AE
X501 8MHz
CAM 4.9V (CN304 4)
CAM POWER
XIRQ
IRQ
ZOOM SENS
F SENS 1
F SENS 2
CAM CS
CAM SO
CAM SI
SCK
LANC IN
LANC OUT
RESET
Q506(1/2)
Q505(1/2)
D503
IC508 VOLTAGE DETECT
VDD
SS4.9V (CN305 12)
CN305
DATA TO MODE
DATA TO CAM
CAM CS
DATA TO MASTER
DATA TO SLVE
SCK
LANC TO CAM
CAM TO LANC
CAM DD ON
SYSTEM RESET
SYSTEM CONTROL (SS-146P BOARD)
CN304
CAM DD ON
POWER (CAMERA DC-
CAMERA(1) (CD-82P BOARD)
VG
CN301
CCD DET SW
CN302
CCD DET SW
ZOOM KEY
MODE B
DATA TRANSFER TIMING DECODER
IC502
Q0 Q1 Q2 Q3 Q4 Q6
DECODE A
DECODE B
DECODE C
DECODE D
R-Y MIX
B-Y MIX
FADER
M AGC CONT
LD
EVR DATA
EVR CLK
Q502
Q504
D502
D501
Q501
Q503
CN801
J CS
J SI
J SCK
JIG
CN303 SCK W801
DATA OUT
DATA IN
J CS
CS
VD
HD
CLP4
AF CLK
AE WIND
Q809
AGC REF
SHUT LEV
STB
DATA
CK
VD
HD
CLP4
CL
CN301
AF CLK
REF 3.5V
REF 2V
REF 1V
REF 2V
CN303
W801
IC805 V REF
CAM4.9V (W801 2)
V+
REF 3.5V
REF 2V
REF 1V
CAMERA(1)
Q801 LPF BUFFER
IC802 AUTO FOCUS DET&WINDOW
GAIN1
IN 1
CLAMP
DET
MID OUT 1
MID IN 1
WINDOW B
WINDOW S
RST
OUT 1B
OUT 1S
OUT 2S
OUT 2B
CLP
IN 2
GAIN2
MID OUT 2
MID IN 2
Q802 LPF BUFFER
VCC
CAM 4.9V (W801 2)
WND B
WND S
RST
WD RST
IC804 BUFFER
14.3MHz
IC801 33 CAM REC
IC803 A-D CONVERTER
V IN
VRT
VRB
D VDD
A VDD
REF 2V (IC805 14)
REF 1V (IC805 8)
R809
CAM4.9V (W801 2)
(See Page 121)
ZOOM SW
WIDE
TELE
CN306
ZOOM C
ZOOM W
ZOOM T
REF 1V (CN303 4)
REF 3.5V (CN303 6)
1Vp-p
H
W801 3 CAM REC
Y LPF OUT (Q302)
CN303
W801
Q808 BUFFER
HPF1
Q807 BUFFER
HPF2
Q806 BUFFER
(See Page 121)
VC-110P BOARD (1/2)

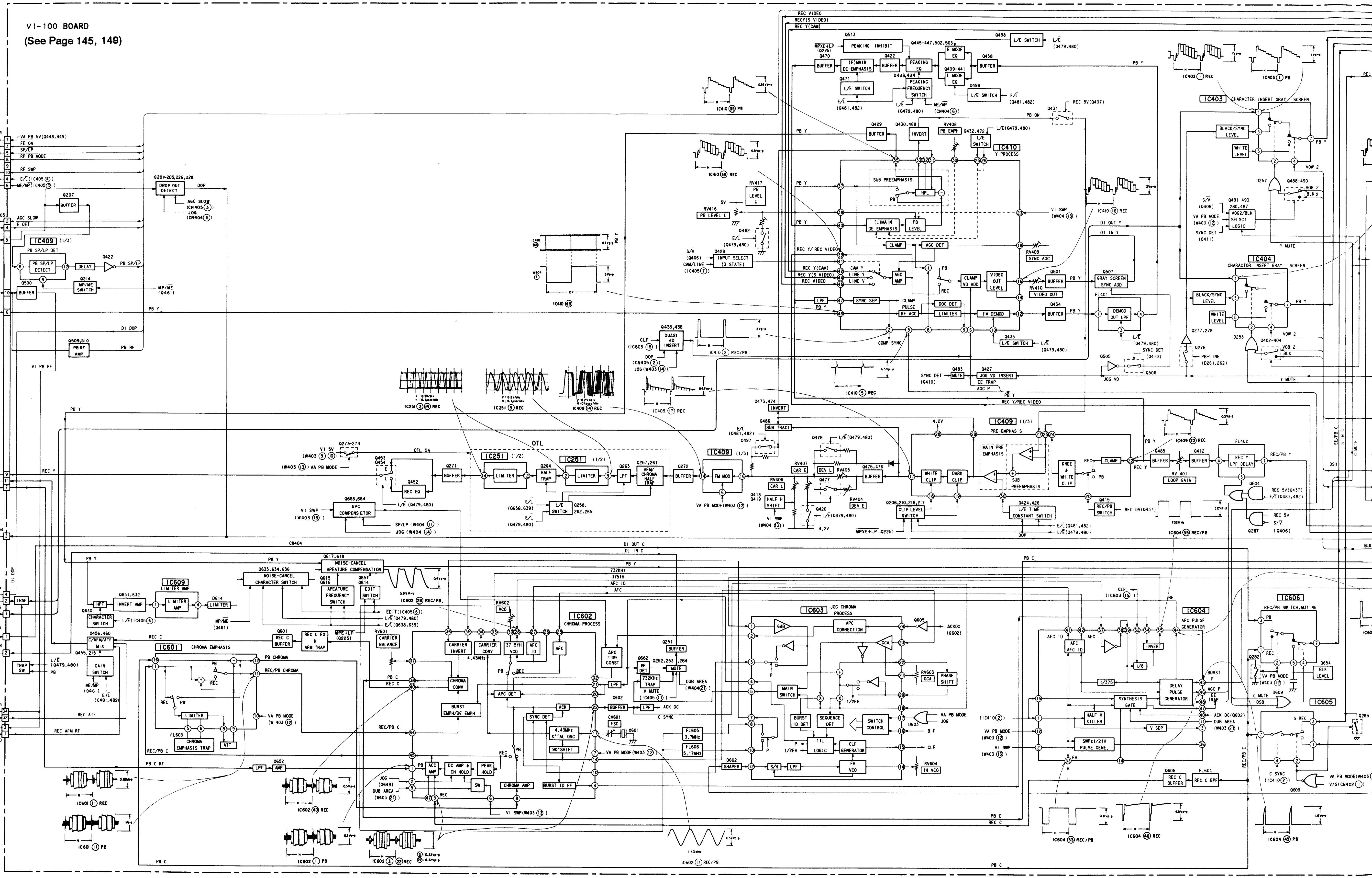

IC509 (1/2) RGB SELECT
IC510 (1/4) AW COMPARATOR
Q506(1/2)
IC510 (1/4) TRIANGLE WAVE FORMER
IC501 ⑤
IC509 (1/2) DISCHARGE
IC501 CAMERA CONTROL
A/D REF(+)
A/D REF(−)
REF 3.5 (CN303 ⑥)
REF 1 (CN303 ④)
AW IN
R SELECT
G SELECT
B SELECT
DISCHARGE
HALL SENS
HALL OUT
FOCUS N
FOCUS F
ZOOM T
ZOOM W
MAN IRIS
EE LOCK
FOCUS 2
FOCUS 1
M IRIS
SENS DRIVE
AGC CONT
MAN GAIN
AE
8MHz
X501 8MHz
IC501 ㉛ CAM REC
CAM 4.9V (CN304 ④)
CAM POWER
XIRQ
IRQ
CCD DET SW
ZOOM KEY
MODE B
VDD
ZOOM SENS
F SENS 1
F SENS 2
CAM CS
CAM SO
CAM SI
SCK
LANC IN
LANC OUT
RESET
Q505(1/2)
D503
IC508 VOLTAGE DETECT
SS4.9V (CN305 ⑫)
IC504 EVR/D-A CONVERTER
VCC
VDD
VSS
IRES REF
AGC REF
HALL GAIN
HALL OS
R-Y MIX
B-Y MIX
FADER
FOCUS SPEED
ZOOM SPEED
M IRIS CONT
M AGC CONT
SHUT LEV
DI
CLK
LD
Q517 BUFFER
CAM 4.9V (CN304 ④)
REF 3.5V (CN303 ⑥)
REF 1V (CN303 ④)
DATA TRANSFER TIMING DECODER
IC502
DECODE A
DECODE B
DECODE C
DECODE D
Q502
Q504
D502
D501
Q501
Q503
IC656 (1/4) M IRIS CONT AMP
IC656 (1/4) BUFFER
IC656 (1/4) HALL OUT AMP
M IRIS CONT
IRIS CONT
IRIS REF
HALL OS
HALL GAIN
IC655 (1/2) AUTO/MANUAL SW
MAN
AUTO
IC651 (1/2) IRIS DRIVE
IC651 (1/2) BIAS(+) CONTROL
REF 2V (CN303 ⑤)
CN651
DRIVE(+)
DRIVE(−)
CONT(+)
CONT(−)
BIAS(+)
HALL(−)
HALL(+)
BIAS(−)
IRIS MOTOR
CAM UNREG (CN304 ②)
Q651, 652 CURRENT LIMITER
Q653,654 5.5V REG
IC653 (1/2) VOLTAGE ERROR AMP
2.45V
IC656 Q655 (1/4) BIAS CURRENT CONTROL
IC652 MOTOR DRIVE
VM
FWD1
REV1
IN 1
FWD2
REV2
IN 2
RSFD1
RSRD1
PGND1
RSFD2
RSRD2
5.5V
TP651
FOCUS 1
FOCUS 2
FOCUS SPEED
ZOOM T
ZOOM W
ZOOM SPEED
CN653
FOCUS MOTOR
CN652
ZOOM MOTOR
Z SENS
IC653 (1/2) BUFFER
ZP
CN654
WP
TP
ZOOM POSITION SENSOR
REF 3.5 (CN303 ⑥)
REF 1 (CN303 ④)
CN655
F SENS 1
F SENS 2
LED POWER
FOCUS POSITION SENSOR
Q656 LED POWER REG&SW
CAM UNREG (CN304 ②)
LENS BLOCK
(See Page 124)
SENS DRIVE
CN305
DATA TO MODE
DATA TO CAM
DATA TO MASTER
DATA TO SLVE
LANC TO CAM
CAM TO LANC
CAM DD ON
SYSTEM RESET
SYSTEM CONTROL (SS-146P BOARD)
CN304
CAM DD ON
POWER (CAMERA DC-DC CONVERTER)
(See Page 129) AF-89P BOARD
CN801
J CS
J SI
J SCK
JIG
CN303
W801
SCK
DATA OUT
DATA IN
J CS
CS
VD
HD
CLP4
AF CLK
AE WIND
Q809
IC801 AUTO FOCUS DATA CONTROL
TRANS CLK
SO
SI
XCS
ACLK IN
MCO
MCI
TRANSFER REGISTER
TIMING GENERATOR
S/P CONV
AE CONT
DIGITAL INTEGRATOR
WINDOW GENERATOR
R810
CAM4.9V (W801 ②)
VDD
A VDD
SYS RST
D801 RESET
IC801 ⑪ CAM REC
IC801 ⑨ CAM REC
IC801 ⑩ CAM REC
14.3MHz
IC801 ㉝ CAM REC
A IN 1
A IN 2
A IN 3
A IN 4
A IN 5
A IN 6
A OUT
ADI 5
ADI 0
1-3CLK
1/3
AE WIND
WIND DIS
WND S
WND B
WDRST
IC803 A-D CONVERTER
V IN
VRT
VRB
D VDD
A VDD
CLK
REF 2V (IC805 ⑭)
REF 1V (IC805 ⑧)
R809
CAM4.9V (W801 ②)
IC804 BUFFER
IC802 AUTO FOCUS DET&WINDOW
CLP
GAIN1
GAIN2
MID OUT 1
MID OUT 2
MID IN 1
MID IN 2
Q801 BUFFER
Q802 BUFFER
LPF
CLAMP
DET
WINDOW B
WINDOW S
RST
OUT 1B
OUT 1S
OUT 2S
OUT 2B
VCC
WND B
WND S
RST
WD RST
CAM 4.9V (W801 ②)
IC805 V REF
CAM4.9V (W801 ②)
REF 3.5V
REF 2V
REF 1V
CN303
W801
REF 2V
CAMERA(1)
Y LPF OUT (Q302)
Q808 BUFFER
HPF1
Q807 BUFFER
HPF2
Q806 BUFFER
REC
CLK

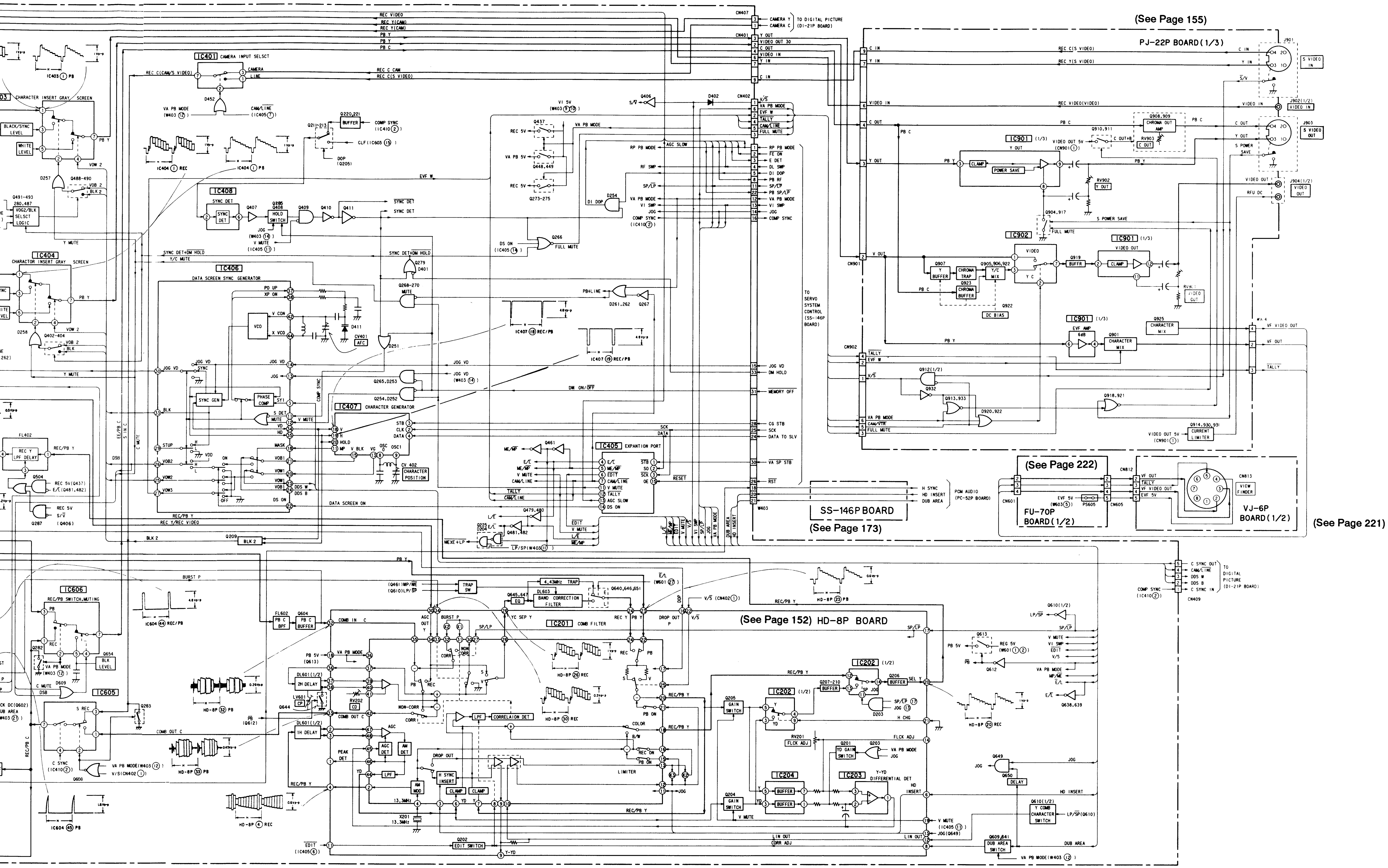
3-6. DIGITAL TITLER BLOCK DIAGRAM


SS-146P BOARD
(See Page 169)
IC805 TITLE MEMORY (SRAM)
Q803
S RAM CS
20 CS
VDD 28
EVER DC (Q104,105)
101~108
11~13·15~19
A0~A5
10~5
A6~A14
4·3·25·24·21·23·2·26·1
WE OE
27 22
19~17·63~59
20~24,27
28·29·51·52·55·53·30·50·31
49 54
IC809 (1/2) A-D CONV.
SYNC-TIP CLAMP
COMPARATOR
REF Y
5V
RV801
TRACKING TH
3.8Vp-p
IC804 37 REC/PB
5.2Vp-p
9.29MHz
IC804 11 REC/PB
5Vp-p
IC804 40 REC/PB
IC804 DIGITAL TITLE PROCESS
64 LCLR
37 YD IN
PARALLEL-SERIAL CONVERSION
W PS 1
W PS 2
R PS 1
R PS 2
H TIMING GENERATOR
OSC 1
OSC 0
OSC
CLK
CT801
CONTOROLLER FREQUENCY
Q812,813
PULSE SHAPER
HD
VD
CLOCK GENERATOR
INTERNAL H GENERATOR
V TIMING GENERATOR (SCROLL)
H AREA
V AREA
DL0 DL1 DL2
Y DELAY
YR,YG,YB SYNTHESIS
YR 48
YG 47
YB 46
Y BLK 45
CG BK 16
CG IN 15
CG MK 14
CR,CG,CB SYNTHESIS
CR 41
CG 40
CB 39
C BLK 38
RF SWP 8
VDD 26
VDD 58
SS5V (W223 6)
DATA TO MASTER
CS
SCK
SI
COMMAND DECODER
SERVO
RF SWP
SYSTEM CONTROL
S RAM CS
DATA TO MASTER
CS
S CLK
DATA TO SLVE
Q811
IC809 (1/2) MATRIX
DY MATRIX
GC
CLAMP
DY
YT BLK
YT GC
CT GC
VCC 19
VIDEO 5V (W223 8)
DR,DB MATRIX
DR
DB
CT BLK
CLP4
CAMERA(1) (VC-110P BOARD)
Y OUT
C OUT
CN801
Y IN
C IN
IC802 TITLE MIX
Q802 DC BIAS
IC801 TITLE MIX
IC807
BLK
TITLE YY
TITLE C
DIGITAL PICTURE (DI-21P)
CN224
TY BLK
CN802
CAM Y
CAM C

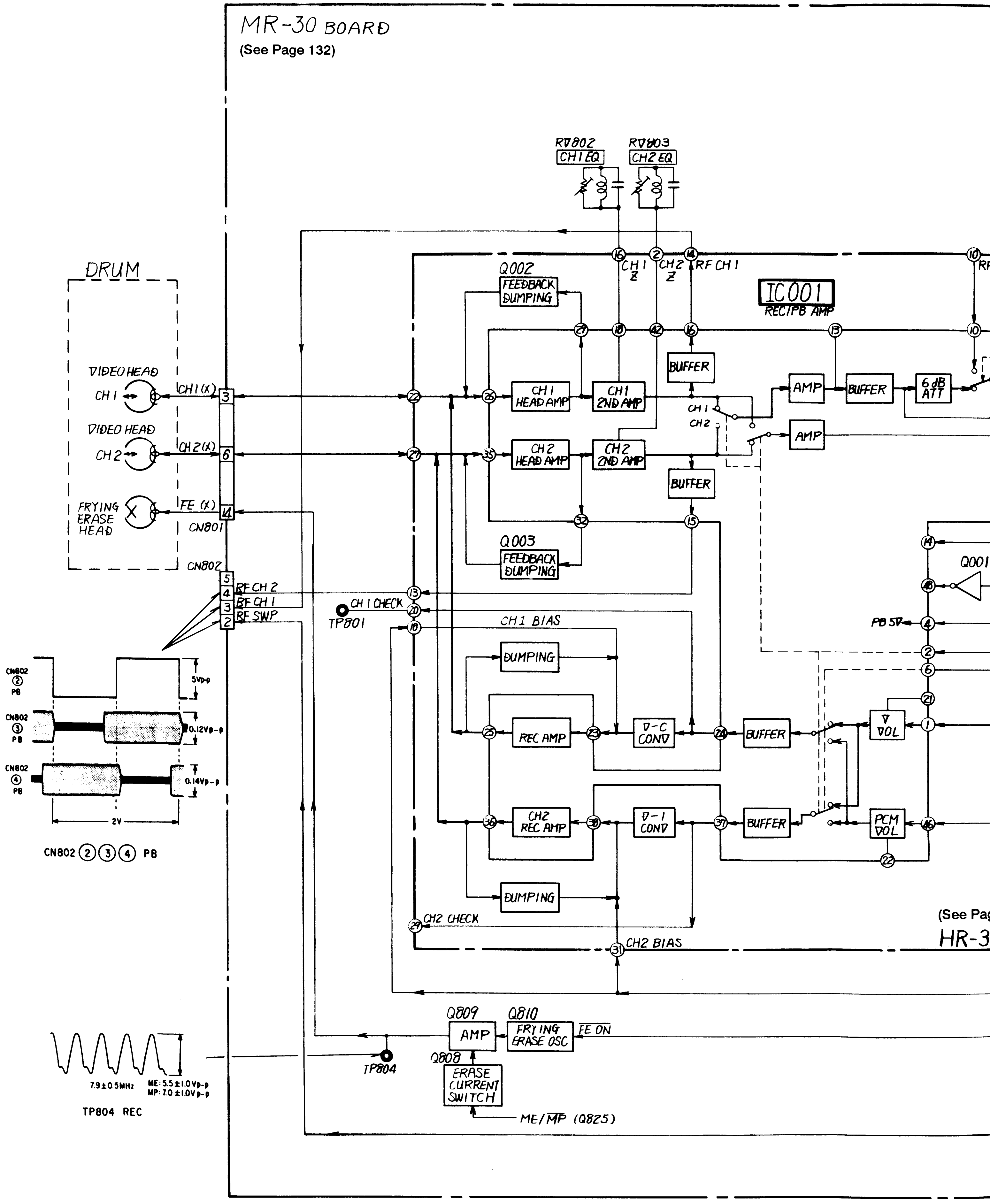

IC805 TITLE MEMORY (SRAM)
Q803
CS
VDD
EVER DC (Q104,105)
101~108
A0~A5
A6~A14
WE OE
11~13·15~19
10~5
4·3·25·24·21·23·2·26·1
19~17·63~59
20~24,27
28·29·51·52·55·53·30·50·31
IC804 DIGITAL TITLE PROCESS
DL0 DL1 DL2
LCLR
YD IN
PARALLEL-SERIAL CONVERSION
W PS 1
W PS 2
R PS 1
R PS 2
H TIMING GENERATOR
H AREA
V AREA
Y DELAY
YR,YG,YB SYNTHESIS
YR YG YB Y BLK
CG BK
CG IN
CG MK
OSC 1
OSC 0
OSC
CLK
INTERNAL H GENERATOR
V TIMING GENERATOR (SCROLL)
CLOCK GENERATOR
CR,CG,CB SYNTHESIS
CR CG CB C BLK
CT801
12.813
PULSE SHAPER
HD
VD
DATA TO MASTER
CS
SCK
SI
COMMAND DECODER
RF SWP
VDD
SS5V (W223 ⑥)
5Vp-p
H
IC804 ㊵ REC/PB
IC809 (1/2) MATRIX
DY MATRIX
GC
CLAMP
DY
YT BLK
YT GC
CT GC
VCC
VIDEO 5V (W223 ⑧)
DR,DB MATRIX
DR
DB
CT BLK
CLP4
Q807
IC808 ENCODER
VIDEO SW
REF Y
VIDEO IN 1
VIDEO IN 2
SUB OUT
VIDEO OUT
FRAME IN
FRAME
M/S
5V
Q801 BUFFER
TITLE Y
Y/C MIX
SYNC MIX
SYNC IN
C SYNC SEP
AFC DET
AFC ERROR
1/32
321H Vco
X802 500kHz
HD OUT
V SYNC OUT
FREE R/N CONT
CLP1
CLP2
CLP1,CLP2 GEN
BGP
BGP GEN
V SYNC SEP
C SYNC OUT
SYNC DET
SYNC DET OUT
MODULATOR
VCA
4.43MHz BPF
Q806 BUFFER
TITLE C
90°
180°
1/4
4FSC VCXO
CT802
4fsc FREQUENCY
X801
BURST LEVEL DET
Q808~810 PHASE SHIFT
REF C
RV802 CHROMA PHASE/GAIN
ACC AMP
BURST GATE
APC DET
ACC DET
KILLER DET
ID KILLER
KILLER
BG P
Vcc
VIDEO 5V (W223 ⑧)
HD IN.PAL/NTSC
1/2
0.7Vp-p
17.734MHz
IC808 ⑳ REC/PB
IC802 TITLE MIX
Q802 DC BIAS
IC801 TITLE MIX
IC807
BLK
VD
TITLE YY
TITLE C
TITLE Y
TITLE C

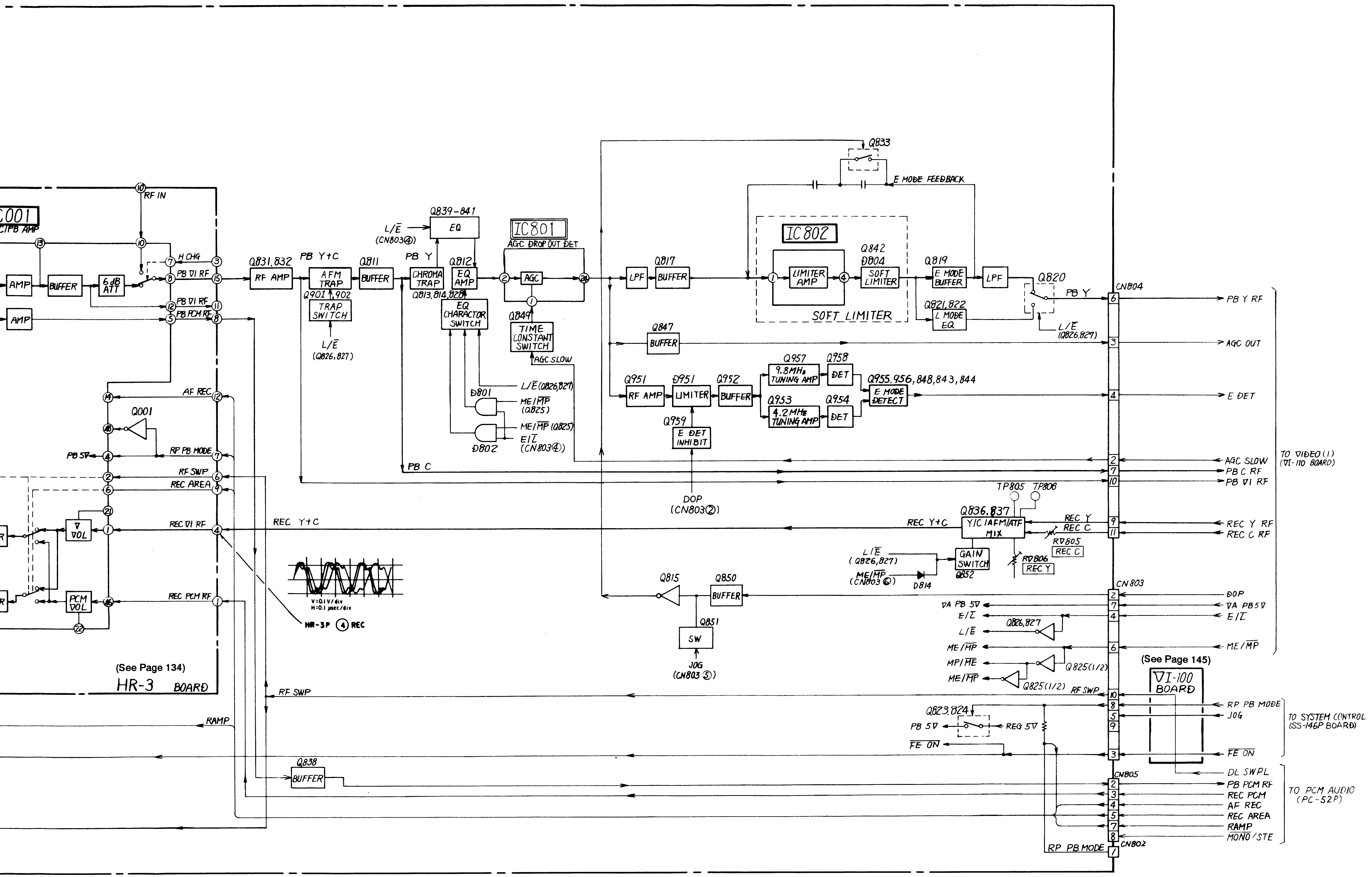
3-7. VIDEO (1) BLOCK DIAGRAM


VI-100 BOARD
(See Page 145, 149)
TO VIDEO(2) (MR-30 BOARD)
TO DIGITAL PICTURE (DI-21P BOARD)
TO SERVO (SS-146P BOARD)
TO AFM AUDIO (AS-22P BOARD)
CN404
CN405
CN406
CN413
CN414
CN408
CN410
W403
DROP OUT DETECT
IC409 (1/3)
PB SP/LP DET
PB SP/LP DETECT
DELAY
MP/ME SWITCH
BUFFER
PB RF AMP
OTL
IC251 (1/2)
LIMITER
HALF TRAP
LPF
AFM/CHROMA HALF TRAP
REC EQ
APC COMPENSETOR
IC409 (1/3)
FM MOD
IC609
LIMITER AMP
NOISE-CANCEL APEATURE COMPENSATION
NOISE-CANCEL CHARACTER SWITCH
APEATURE FREQUENCY SWITCH
EDIT SWITCH
HPF
INVERT AMP
CHARACTER SWITCH
C/AFM/ATF MIX
GAIN SWITCH
TRAP
TRAP SW
IC601 CHROMA EMPHASIS
CHROMA EMPHASIS TRAP
ATT
REC C BUFFER
REC C EQ & AFM TRAP
CARRIER BALANCE
IC602 CHROMA PROCESS
CARRIER INVERT
CARRIER CONV
37 5TH VCO
AFC ID
AFC
CHROMA CONV
BURST EMPH/DE EMPH
APC DET
ACK
SYNC DET
4.43MHz X'TAL OSC
90°SHIFT
ACC AMP
DC AMP & CH HOLD
PEAK HOLD
SW
CHROMA AMP
BURST ID FF
APC TIME CONST
BF DET
732KHz TRAP
V MUTE
MUTE
IC603 JOG CHROMA PROCESS
64B
APC CORRECTION
GCA
MAIN SWITCH
BURST ID DET
SEQUENCE DET
SWITCH CONTROL
11L LOGIC
CLF GENERATOR
FH VCO
S/H
SHAPER
PHASE SHIFT
IC604 AFC PULSE GENERATOR
AFC ID
INVERT
1/8
1/375
DELAY PULSE GENERATOR
SYNTHESIS GATE
HALF H KILLER
V SEP
SWPx1/21H PULSE GENE.
REC C BUFFER
REC C BPF
IC606 REC/PB SWITCH,MUTING
BLK LEVEL
IC605
IC410 Y PROCESS
PEAKING INHIBIT
(E)MAIN DE-EMPHASIS
PEAKING EQ
E MODE EQ
L MODE EQ
PEAKING FREQUENCY SWITCH
L/E SWITCH
SUB PREEMPHASIS
HPL
(L)MAIN DE EMPHASIS
PB LEVEL
CLAMP
AGC DET
INPUT SELECT (3 STATE)
CAM Y
LINE Y
LINE V
AGC AMP
CLAMP VD ADD
VIDEO OUT LEVEL
VIDEO OUT
SYNC AGC
SYNC SEP
CLAMP PULSE
RF AGC
DOC DET
LIMITER
FM DEMOD
QUASI HD INSERT
JOG VD INSERT
EE TRAP
IC409 (1/3) PRE-EMPHASIS
MAIN PRE EMPHASIS
SUB PREEMPHASIS
WHITE CLIP
DARK CLIP
KNEE & WHITE CLIP
CLIP LEVEL SWITCH
CONSTANT SWITCH
REC/PB SWITCH
SUB TRACT
CAR E
CAR L
DEV L
DEV E
HALF H SHIFT
LOOP GAIN
REC Y LPF DELAY
IC403 CHARACTER INSERT GRAY SCREEN
BLACK/SYNC LEVEL
WHITE LEVEL
IC404 CHARACTOR INSERT GRAY SCREEN
GRAY SCREEN SYNC ADD
DEMOD OUT LPF
VOGZ/BLK SELSCT LOGIC
IC605

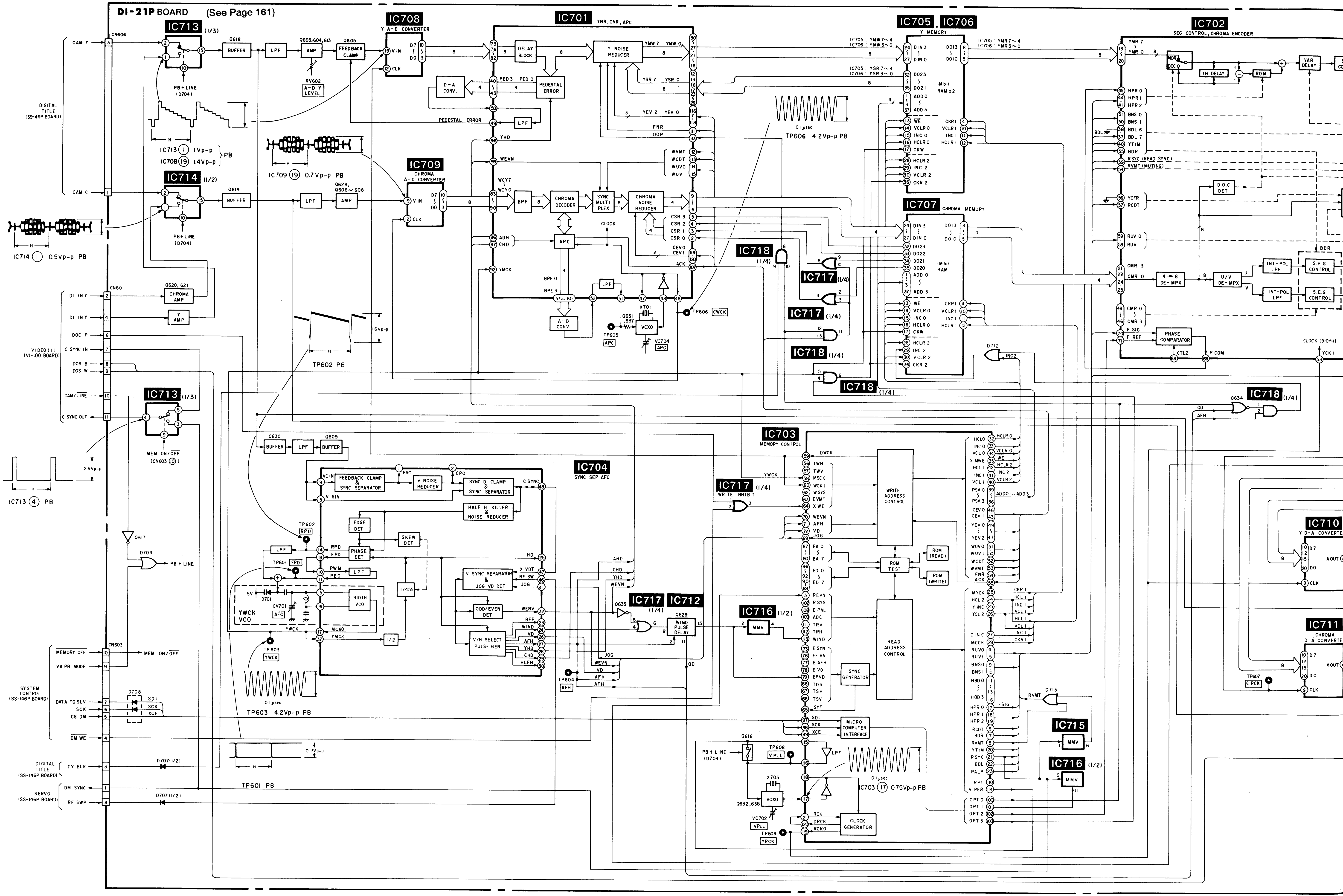

(See Page 155)
PJ-22P BOARD (1/3)
IC401 CAMERA INPUT SELSCT
IC404 CHARACTOR INSERT GRAY SCREEN
IC406 DATA SCREEN SYNC GENERATOR
IC407 CHARACTER GENERATOR
IC408 SYNC DET
IC405 EXPANTION PORT
IC606 REC/PB SWITCH, MUTING
IC605
IC201 COMB FILTER
IC202 (1/2)
IC203 Y-YD DIFFERENTIAL DET
IC204
IC901 (1/3)
IC902
CN407
CN401
CN402
CN901
CN902
CN409
W403
J901
J902 (1/2)
J903
J904 (1/2)
S VIDEO IN
VIDEO IN
S VIDEO OUT
VIDEO OUT
TO DIGITAL PICTURE (DI-21P BOARD)
TO SERVO SYSTEM CONTROL (SS-146P BOARD)
SS-146P BOARD
(See Page 173)
PCM AUDIO (PC-52P BOARD)
(See Page 222)
FU-70P BOARD (1/2)
VJ-6P BOARD (1/2)
(See Page 221)
VIEW FINDER
(See Page 152) HD-8P BOARD
DL601 (1/2) 2H DELAY
DL601 (1/2) 1H DELAY
DL603 BAND CORRECTION FILTER
4.43MHz TRAP
CORRELAION DET
EDIT SWITCH
DUB AREA SWITCH
X201 13.3MHz

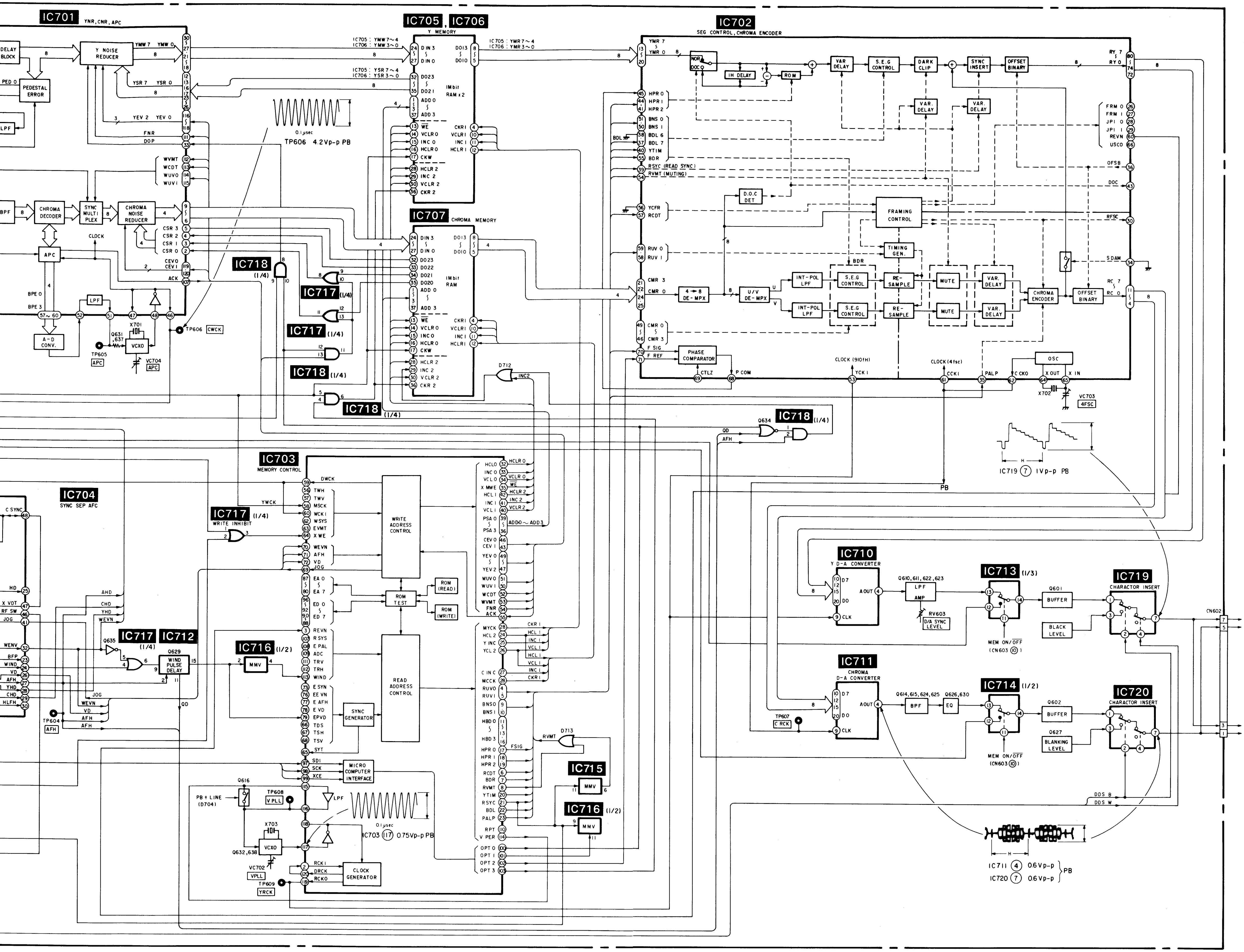
3-8. VIDEO (2) BLOCK DIAGRAM


MR-30 BOARD
(See Page 132)
DRUM
VIDEO HEAD
CH 1
VIDEO HEAD
CH 2
FRYING ERASE HEAD
CH 1 (X)
CH 2 (X)
FE (X)
CN801
CN802
RF CH 2
RF CH 1
RF SWP
CN802 ② PB
5Vp-p
CN802 ③ PB
0.12Vp-p
CN802 ④ PB
0.14Vp-p
2V
CN802 ② ③ ④ PB
7.9±0.5MHz
ME: 5.5±1.0Vp-p
MP: 7.0±1.0Vp-p
TP804 REC
RV802
CH1 EQ
RV803
CH2 EQ
CH 1 Z
CH 2 Z
RF CH 1
Q002
FEEDBACK DUMPING
IC001
REC/PB AMP
CH 1 HEAD AMP
CH 1 2ND AMP
CH 2 HEAD AMP
CH 2 2ND AMP
BUFFER
BUFFER
CH 1
CH 2
AMP
AMP
BUFFER
6 dB ATT
Q003
FEEDBACK DUMPING
Q001
PB 5V
CH 1 CHECK
TP801
CH 1 BIAS
DUMPING
REC AMP
V-C CONV
BUFFER
V VOL
CH2 REC AMP
V-I CONV
BUFFER
PCM VOL
DUMPING
CH2 CHECK
CH2 BIAS
(See Pa
HR-3
Q809
Q810
AMP
FRYING ERASE OSC
FE ON
Q808
TP804
ERASE CURRENT SWITCH
ME/MP (Q825)

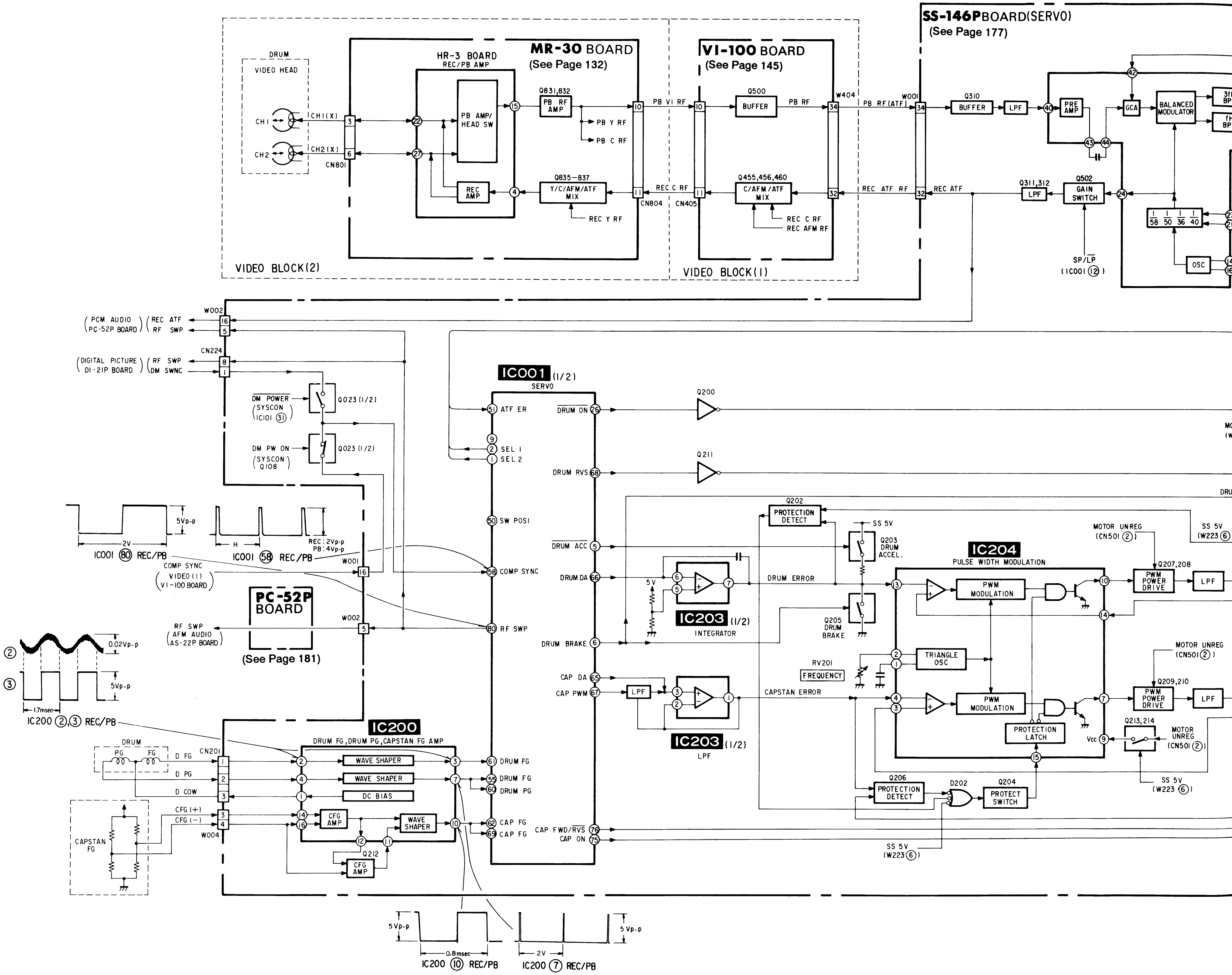

C001
C/PB AMP
RF IN
AMP
BUFFER
6dB ATT
AMP
H CHG
PB VI RF
PB VI RF
PB PCM RF
Q831,832
RF AMP
PB Y+C
AFM TRAP
Q901,902
TRAP SWITCH
L/E (Q826,827)
Q811
BUFFER
PB Y
CHROMA TRAP
Q813,814,828
Q839-841
EQ
L/E (CN803④)
Q812
EQ AMP
EQ CHARACTOR SWITCH
IC801
AGC DROP OUT DET
AGC
Q849
TIME CONSTANT SWITCH
AGC SLOW
L/E (Q826,827)
D801
ME/MP (Q825)
ME/MP (Q825)
E/I (CN803④)
D802
LPF
Q817
BUFFER
Q833
E MODE FEEDBACK
IC802
LIMITER AMP
Q842
D804
SOFT LIMITER
SOFT LIMITER
Q819
E MODE BUFFER
LPF
Q820
PB Y
Q821,822
L MODE EQ
L/E (Q826,827)
Q847
BUFFER
Q951
RF AMP
D951
LIMITER
Q952
BUFFER
Q957
9.8MHz TUNING AMP
Q958
DET
Q953
4.2MHz TUNING AMP
Q954
DET
Q955,956,848,843,844
E MODE DETECT
Q959
E DET INHIBIT
DOP (CN803②)
PB C
AF REC
Q001
PB 5V
RP PB MODE
RF SWP
REC AREA
REC VI RF
V VOL
PCM VOL
REC PCM RF
REC Y+C
V:0.1V/div
H:0.1 μsec/div
HR-3P ④ REC
(See Page 134)
HR-3 BOARD
Q815
Q850
BUFFER
Q851
SW
JOG (CN803⑤)
TP805
TP806
Q836,837
Y/C /AFM/ATF MIX
REC Y+C
REC Y
REC C
RV805
REC C
RV806
REC Y
L/E (Q826,827)
ME/MP (CN803⑥)
D814
GAIN SWITCH
Q852
CN804
PB Y RF
AGC OUT
E DET
AGC SLOW
PB C RF
PB VI RF
REC Y RF
REC C RF
TO VIDEO (1) (VI-110 BOARD)
CN803
DOP
VA PB 5V
E/I
ME/MP
VA PB 5V
E/I
L/E
Q826,827
ME/MP
MP/ME
ME/MP
Q825(1/2)
Q825(1/2)
(See Page 145)
VI-100 BOARD
RF SWP
RF SWP
RAMP
Q823,824
PB 5V
REG 5V
FE ON
RP PB MODE
JOG
FE ON
TO SYSTEM CONTROL (SS-146P BOARD)
Q838
BUFFER
CN805
DL SWPL
PB PCM RF
REC PCM
AF REC
REC AREA
RAMP
MONO/STE
TO PCM AUDIO (PC-52P)
RP PB MODE
CN802

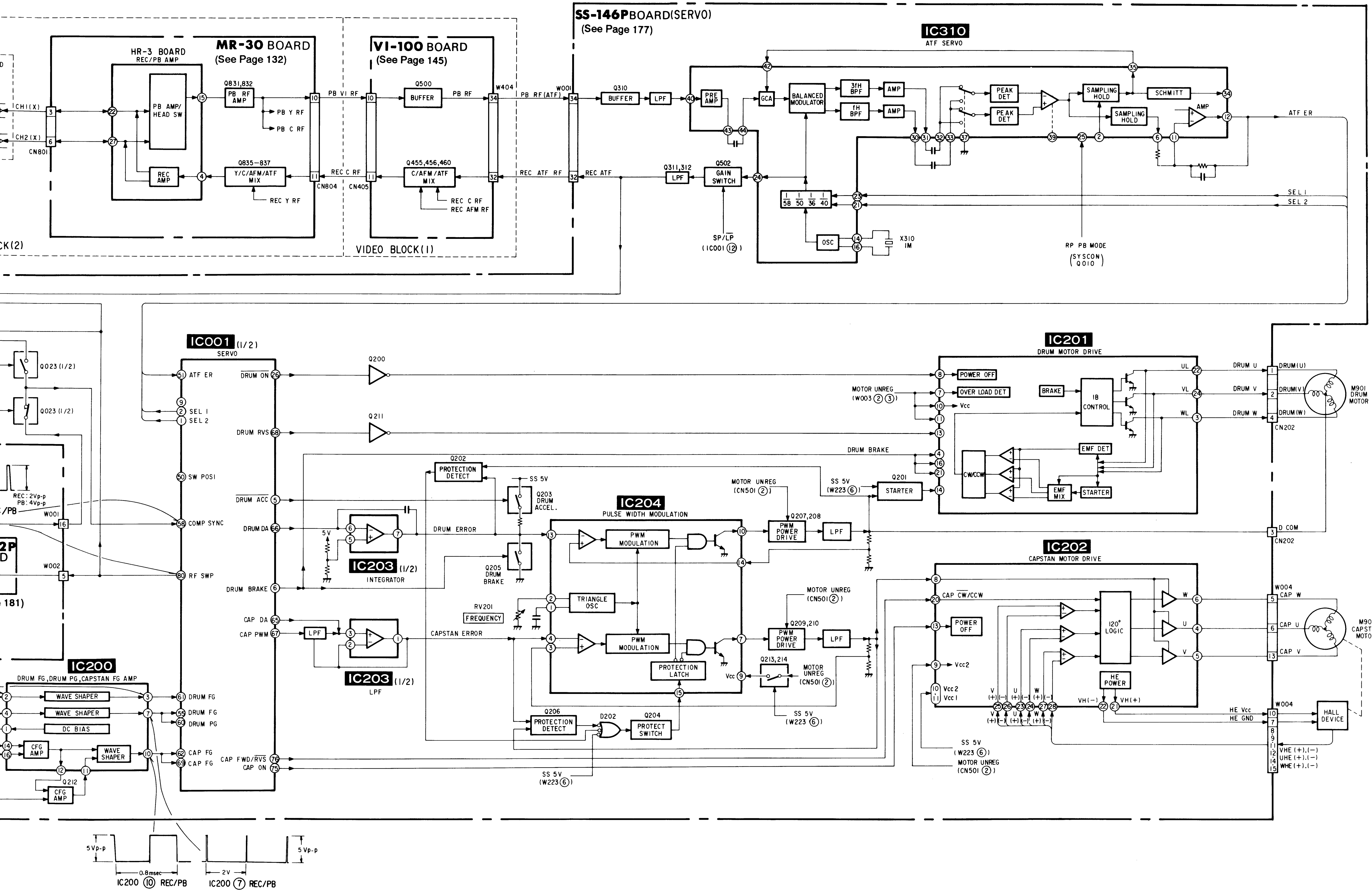
3-9. DEGITAL PICTURE BLOCK DIAGRAM


DI-21P BOARD (See Page 161)
IC713 (1/3)
IC708 Y A-D CONVERTER
IC701 YNR, CNR, APC
IC705, IC706 Y MEMORY
IC702 SEG CONTROL, CHROMA ENCODER
CN604
CAM Y
CAM C
DIGITAL TITLE (SS-146P BOARD)
Q618 BUFFER
LPF
Q603,604,613 AMP
Q605 FEEDBACK CLAMP
RV602 A-D Y LEVEL
DELAY BLOCK
Y NOISE REDUCER
PEDESTAL ERROR
D-A CONV.
PEDESTAL ERROR
PB+LINE (D704)
IC713 ① 1Vp-p
IC708 ⑲ 1.4Vp-p
PB
IC714 (1/2)
Q619 BUFFER
IC709 CHROMA A-D CONVERTER
IC709 ⑲ 0.7Vp-p PB
Q628, Q606~608
AMP
BPF
CHROMA DECODER
SYNC MULTI PLEX
CHROMA NOISE REDUCER
APC
A-D CONV.
VCXO
X701
Q631, 637
TP605 APC
VC704 APC
TP606 CWCK
0.1μsec
TP606 4.2Vp-p PB
IC714 ① 0.5Vp-p PB
CN601
DI IN C
DI IN Y
DOC P
C SYNC IN
DOS B
DOS W
VIDEO (1) (VI-100 BOARD)
Q620, 621 CHROMA AMP
Y AMP
TP602 PB
1.6Vp-p
CAM/LINE
C SYNC OUT
IC713 (1/3)
MEM ON/OFF (CN603 ⑩)
2.6Vp-p
IC713 ④ PB
Q617
D704
PB+LINE
IC707 CHROMA MEMORY
1Mbit RAM x2
1Mbit RAM
IC718 (1/4)
IC717 (1/4)
D712
IC703 MEMORY CONTROL
WRITE ADDRESS CONTROL
ROM TEST
ROM (READ)
ROM (WRITE)
READ ADDRESS CONTROL
SYNC GENERATOR
MICRO COMPUTER INTERFACE
CLOCK GENERATOR
IC717 (1/4) WRITE INHIBIT
Q630 BUFFER
Q609 BUFFER
IC704 SYNC SEP AFC
FEEDBACK CLAMP & SYNC SEPARATOR
H NOISE REDUCER
SYNC D CLAMP & SYNC SEPARATOR
HALF H KILLER & NOISE REDUCER
EDGE DET
SKEW DET
PHASE DET
TP602 RPD
TP601 FPD
1/455
V SYNC SEPARATOR & JOG VD DET
ODD/EVEN DET
V/H SELECT PULSE GEN
910fH VCO
YWCK VCO
D701
CV701 AFC
1/2
TP603 YWCK
TP603 4.2Vp-p PB
Q635
IC717 (1/4)
IC712
Q629 WIND PULSE DELAY
IC716 (1/2)
MMV
TP604 AFH
CN603
MEMORY OFF
VA PB MODE
MEM ON/OFF
SYSTEM CONTROL (SS-146P BOARD)
DATA TO SLV
SCK
CS DM
DM WE
D708
SDI
SCK
XCE
DIGITAL TITLE (SS-146P BOARD)
TY BLK
D707 (1/2)
SERVO (SS-146P BOARD)
DM SYNC
RF SWP
0.13Vp-p
TP601 PB
Q616
PB+LINE (D704)
TP608 VPLL
X703
VCXO
Q632, 638
VC702 VPLL
TP609 YRCK
LPF
IC703 ⑰ 0.75Vp-p PB
IC715
MMV
IC716 (1/2)
D713
IC718 (1/4)
Q634
IH DELAY
ROM
VAR DELAY
D.O.C DET
4→8 DE-MPX
U/V DE-MPX
INT-POL LPF
S.E.G CONTROL
PHASE COMPARATOR
CLOCK (910fH)
IC710 Y D-A CONVERTER
IC711 CHROMA D-A CONVERTER
TP607 C RCK

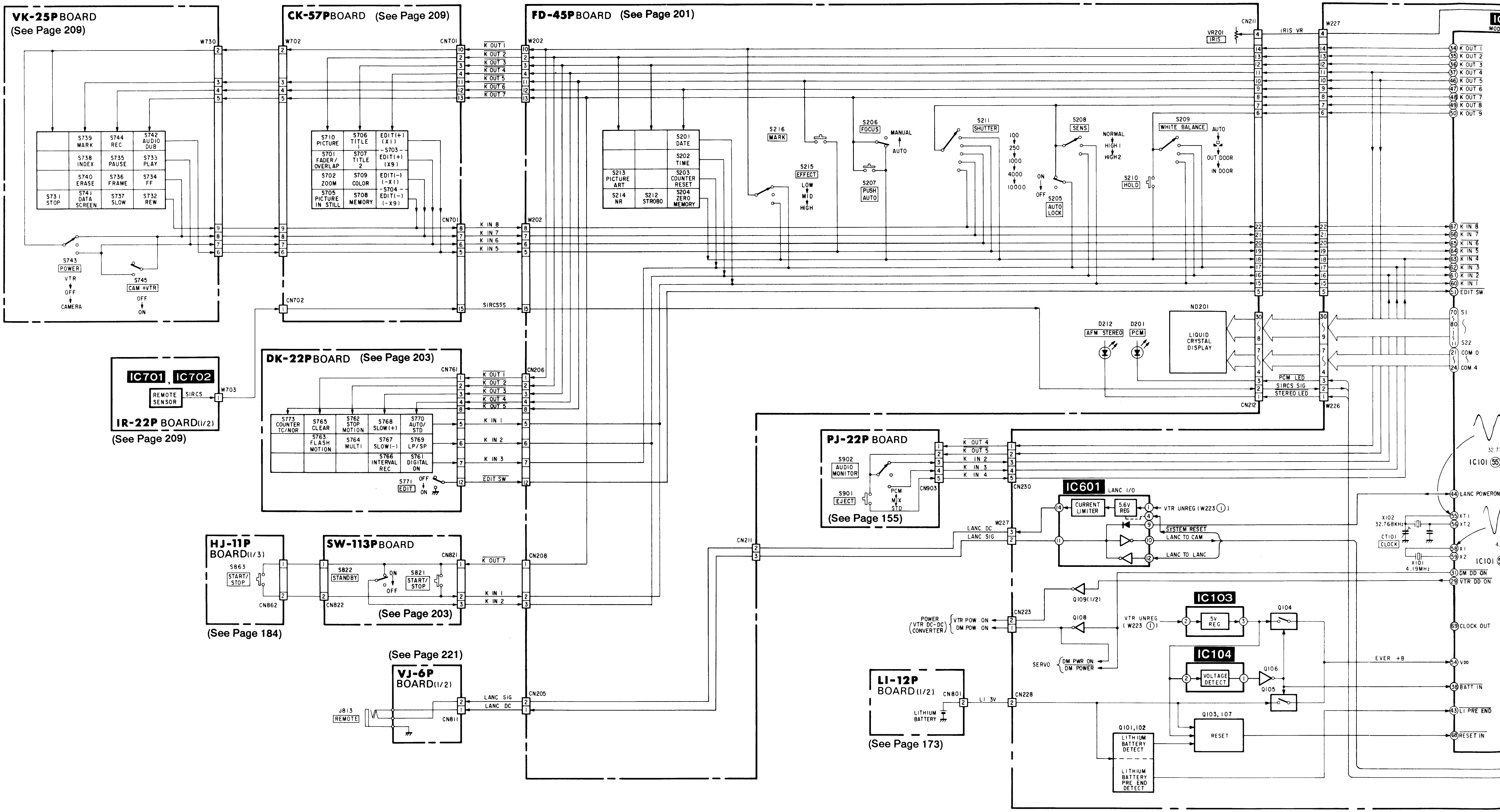

IC701 YNR, CNR, APC
Y NOISE REDUCER
DELAY BLOCK
PEDESTAL ERROR
CHROMA DECODER
SYNC MULTI PLEX
CHROMA NOISE REDUCER
APC
A-D CONV.
VCXO
X701
VC704 APC
TP605 APC
TP606 CWCK
IC705, IC706 Y MEMORY
1Mbit RAM x 2
IC707 CHROMA MEMORY
1Mbit RAM
TP606 4.2Vp-p PB
0.1μsec
IC718 (1/4)
IC717 (1/4)
IC702 SEG CONTROL, CHROMA ENCODER
NOR DOC
1H DELAY
ROM
VAR. DELAY
S.E.G CONTROL
DARK CLIP
SYNC INSERT
OFFSET BINARY
D.O.C DET
FRAMING CONTROL
TIMING GEN.
4→8 DE-MPX
U/V DE-MPX
INT-POL LPF
RE-SAMPLE
MUTE
CHROMA ENCODER
PHASE COMPARATOR
OSC
X702
VC703 4FSC
CLOCK (910fH)
CLOCK (4fsc)
RSYC (READ SYNC)
RVMT (MUTING)
D712
Q634
IC719 ⑦ 1Vp-p PB
IC703 MEMORY CONTROL
WRITE ADDRESS CONTROL
ROM TEST
ROM (READ)
ROM (WRITE)
READ ADDRESS CONTROL
SYNC GENERATOR
MICRO COMPUTER INTERFACE
CLOCK GENERATOR
IC703 ⑪⑦ 0.75Vp-p PB
IC704 SYNC SEP AFC
IC717 WRITE INHIBIT (1/4)
IC717 (1/4) IC712
Q629 WIND PULSE DELAY
Q635
IC716 (1/2) MMV
IC715 MMV
D713
PB+LINE (D704)
Q616
TP608 VPLL
X703
Q632,638
VC702 VPLL
TP609 YRCK
TP604 AFH
IC710 Y D-A CONVERTER
Q610,611,622,623 LPF AMP
RV603 D/A SYNC LEVEL
IC713 (1/3)
Q601 BUFFER
BLACK LEVEL
MEM ON/OFF (CN603 ⑩)
IC719 CHARACTOR INSERT
IC711 CHROMA D-A CONVERTER
Q614,615,624,625 BPF
Q626,630 EQ
IC714 (1/2)
Q602 BUFFER
Q627 BLANKING LEVEL
IC720 CHARACTOR INSERT
TP607 C RCK
CN602
CAM Y
CAM C
DI OUT Y
DI OUT C
VIDEO (1) (VI-100 BOARD)
DDS B
DDS W
IC711 ④ 0.6Vp-p PB
IC720 ⑦ 0.6Vp-p

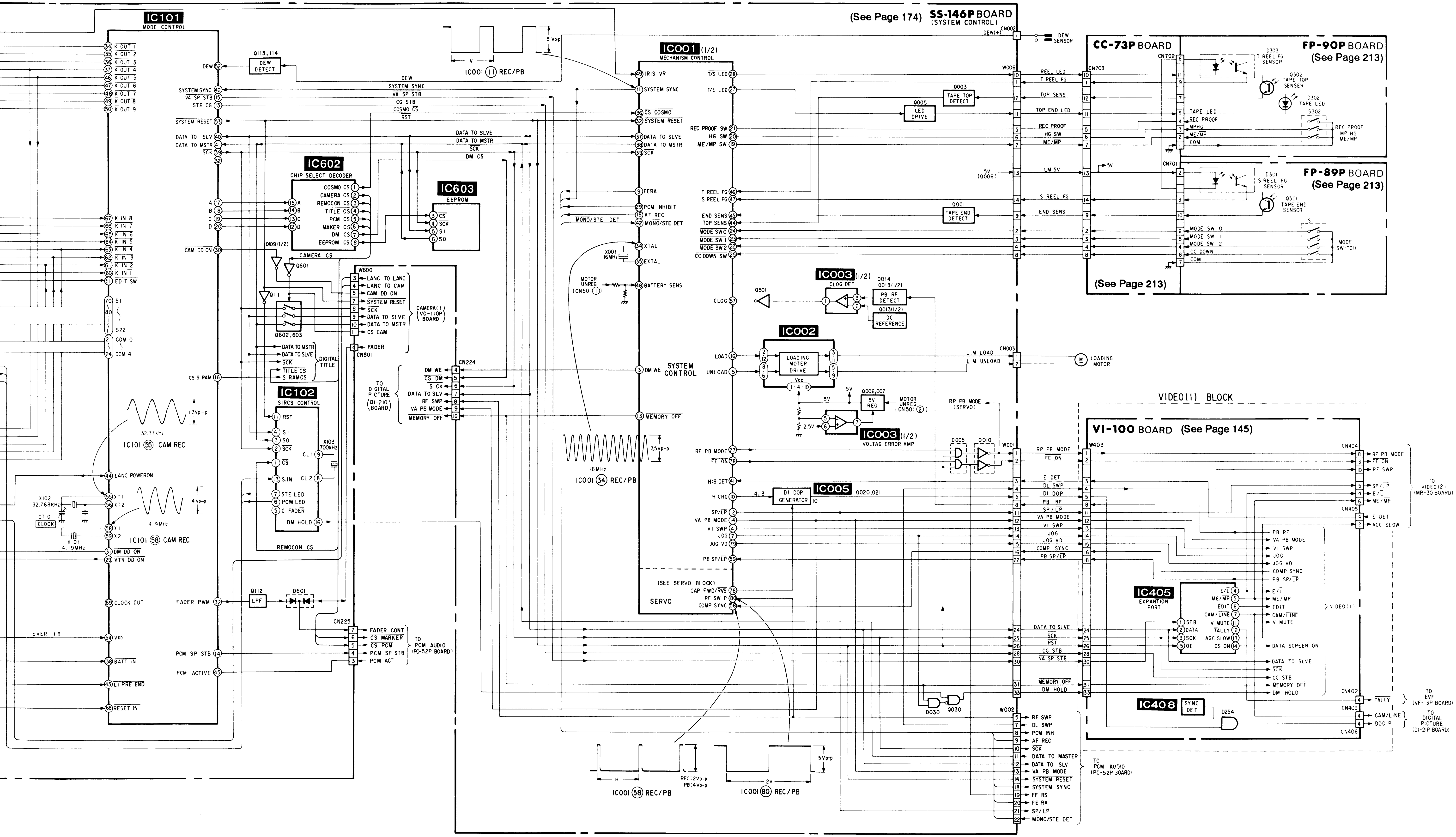
3-10. SERVO BLOCK DIAGRAM


SS-146P BOARD(SERVO)
(See Page 177)
MR-30 BOARD
(See Page 132)
VI-100 BOARD
(See Page 145)
HR-3 BOARD
REC/PB AMP
DRUM
VIDEO HEAD
CH1
CH2
CH1(X)
CH2(X)
CN801
PB AMP/ HEAD SW
REC AMP
Q831,832
PB RF AMP
PB Y RF
PB C RF
Q835—837
Y/C/AFM/ATF MIX
REC Y RF
PB VI RF
REC C RF
CN804
CN405
Q500
BUFFER
PB RF
Q455,456,460
C/AFM/ATF MIX
REC C RF
REC AFM RF
W404
REC ATF RF
W001
PB RF(ATF)
REC ATF
VIDEO BLOCK(2)
VIDEO BLOCK(1)
Q310
BUFFER
LPF
PRE AMP
GCA
BALANCED MODULATOR
Q311,312
LPF
Q502
GAIN SWITCH
SP/LP
(IC001 ⑫)
58 50 36 40
OSC
W002
(PCM AUDIO PC-52P BOARD)
(REC ATF RF SWP)
CN224
(DIGITAL PICTURE DI-21P BOARD)
(RF SWP DM SWNC)
DM POWER
(SYSCON IC101 ㉛)
Q023(1/2)
DM PW ON
(SYSCON Q108)
Q023(1/2)
IC001 (1/2)
SERVO
ATF ER
SEL 1
SEL 2
SW POSI
COMP SYNC
RF SWP
DRUM ON
DRUM RVS
DRUM ACC
DRUM DA
DRUM BRAKE
CAP DA
CAP PWM
CAP FWD/RVS
CAP ON
Q200
Q211
5Vp-p
2V
IC001 ⑧⓪ REC/PB
H
IC001 ⑤⑧ REC/PB
REC: 2Vp-p
PB: 4Vp-p
COMP SYNC
(VIDEO(1) VI-100 BOARD)
W001
PC-52P BOARD
(See Page 181)
W002
RF SWP
(AFM AUDIO AS-22P BOARD)
0.02Vp-p
5Vp-p
1.7msec
IC200 ②,③ REC/PB
IC200
DRUM FG,DRUM PG,CAPSTAN FG AMP
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
Q212
CFG AMP
DRUM
PG
FG
CN201
D FG
D PG
D COW
CFG (+)
CFG (−)
W004
CAPSTAN FG
DRUM FG
DRUM FG
DRUM PG
CAP FG
CAP FG
Q202
PROTECTION DETECT
SS 5V
Q203
DRUM ACCEL.
Q205
DRUM BRAKE
DRUM ERROR
5V
IC203 (1/2)
INTEGRATOR
LPF
IC203 (1/2)
LPF
CAPSTAN ERROR
RV201
FREQUENCY
IC204
PULSE WIDTH MODULATION
PWM MODULATION
TRIANGLE OSC
PWM MODULATION
PROTECTION LATCH
Vcc
MOTOR UNREG
(CN501 ②)
Q207,208
PWM POWER DRIVE
LPF
SS 5V
(W223 ⑥)
MOTOR UNREG
(CN501 ②)
Q209,210
PWM POWER DRIVE
LPF
Q213,214
MOTOR UNREG
(CN501 ②)
SS 5V
(W223 ⑥)
Q206
PROTECTION DETECT
D202
Q204
PROTECT SWITCH
SS 5V
(W223 ⑥)
5Vp-p
0.8msec
IC200 ⑩ REC/PB
2V
5Vp-p
IC200 ⑦ REC/PB


SS-146P BOARD(SERVO)
(See Page 177)
MR-30 BOARD
(See Page 132)
HR-3 BOARD
REC/PB AMP
PB AMP/HEAD SW
REC AMP
Q831,832
PB RF AMP
PB Y RF
PB C RF
Q835–837
Y/C/AFM/ATF MIX
REC Y RF
VI-100 BOARD
(See Page 145)
Q500
BUFFER
PB RF
Q455,456,460
C/AFM/ATF MIX
REC C RF
REC AFM RF
VIDEO BLOCK(1)
CK(2)
CH1(X)
CH2(X)
CN801
CN804
CN405
W404
W001
PB VI RF
REC C RF
PB RF(ATF)
REC ATF RF
REC ATF
IC310
ATF SERVO
Q310
BUFFER
LPF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
PEAK DET
SAMPLING HOLD
SCHMITT
ATF ER
Q311,312
LPF
Q502
GAIN SWITCH
SP/LP
(IC001 ⑫)
58 50 36 40
OSC
X310 1M
SEL 1
SEL 2
RP PB MODE
(SYSCON Q010)
IC001 (1/2)
SERVO
ATF ER
SEL 1
SEL 2
DRUM ON
DRUM RVS
SW POSI
DRUM ACC
COMP SYNC
DRUM DA
RF SWP
DRUM BRAKE
CAP DA
CAP PWM
DRUM FG
DRUM FG
DRUM PG
CAP FG
CAP FG
CAP FWD/RVS
CAP ON
Q023 (1/2)
Q023 (1/2)
REC: 2Vp-p
PB: 4Vp-p
W001
W002
Q200
Q211
Q202
PROTECTION DETECT
SS 5V
Q203
DRUM ACCEL.
Q205
DRUM BRAKE
IC203 (1/2)
INTEGRATOR
DRUM ERROR
IC203 (1/2)
LPF
CAPSTAN ERROR
RV201
FREQUENCY
IC204
PULSE WIDTH MODULATION
PWM MODULATION
TRIANGLE OSC
PROTECTION LATCH
Q206
PROTECTION DETECT
D202
Q204
PROTECT SWITCH
SS 5V
(W223 ⑥)
MOTOR UNREG
(CN501 ②)
Q207,208
PWM POWER DRIVE
LPF
Q209,210
PWM POWER DRIVE
Q213,214
MOTOR UNREG
(CN501 ②)
SS 5V
(W223 ⑥)
Q201
STARTER
IC201
DRUM MOTOR DRIVE
POWER OFF
OVER LOAD DET
MOTOR UNREG
(W003 ② ③)
Vcc
DRUM BRAKE
BRAKE
IB CONTROL
EMF DET
CW/CCW
EMF MIX
STARTER
UL
VL
WL
DRUM U
DRUM V
DRUM W
DRUM(U)
DRUM(V)
DRUM(W)
CN202
M901
DRUM MOTOR
D COM
CN202
IC202
CAPSTAN MOTOR DRIVE
CAP CW/CCW
POWER OFF
Vcc2
Vcc2
Vcc1
120° LOGIC
HE POWER
VH(−)
VH(+)
W004
CAP W
CAP U
CAP V
M902
CAPSTAN MOTOR
HE Vcc
HE GND
HALL DEVICE
VHE (+),(−)
UHE (+),(−)
WHE (+),(−)
SS 5V
(W223 ⑥)
MOTOR UNREG
(CN501 ②)
IC200
DRUM FG, DRUM PG, CAPSTAN FG AMP
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
Q212
CFG AMP
2P
D
181)
5Vp-p
0.8msec
IC200 ⑩ REC/PB
2V
5Vp-p
IC200 ⑦ REC/PB

3-11. SYSTEM CONTROL BLOCK DIAGRAM


VK-25P BOARD
(See Page 209)
W730
S739 MARK
S744 REC
S742 AUDIO DUB
S738 INDEX
S735 PAUSE
S733 PLAY
S740 ERASE
S736 FRAME
S734 FF
S731 STOP
S741 DATA SCREEN
S737 SLOW
S732 REW
S743 POWER
VTR
OFF
CAMERA
S745 CAM +VTR
OFF
ON
CK-57P BOARD (See Page 209)
W702
CN701
S710 PICTURE
S706 TITLE
EDIT(+) (X1)
S701 FADER/ OVERLAP
S707 TITLE 2
-S703- EDIT(+) (X9)
S702 ZOOM
S709 COLOR
EDIT(-) (-X1)
S705 PICTURE IN STILL
S708 MEMORY
-S704- EDIT(-) (-X9)
CN702
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K OUT 6
K OUT 7
K IN 8
K IN 7
K IN 6
K IN 5
SIRCSSS
FD-45P BOARD (See Page 201)
W202
S201 DATE
S202 TIME
S213 PICTURE ART
S203 COUNTER RESET
S214 NR
S212 STROBO
S204 ZERO MEMORY
S216 MARK
S215 EFFECT
LOW
MID
HIGH
S206 FOCUS
MANUAL
AUTO
S207 PUSH AUTO
S211 SHUTTER
100
250
1000
4000
10000
ON
OFF
S205 AUTO LOCK
S208 SENS
NORMAL
HIGH 1
HIGH 2
S210 HOLD
S209 WHITE BALANCE
AUTO
OUT DOOR
IN DOOR
VR201 IRIS
CN211
IRIS VR
W227
ND201
LIQUID CRYSTAL DISPLAY
D212 AFM STEREO
D201 PCM
PCM LED
SIRCS SIG
STEREO LED
CN212
W226
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K OUT 6
K OUT 7
K OUT 8
K OUT 9
K IN 8
K IN 7
K IN 6
K IN 5
K IN 4
K IN 3
K IN 2
K IN 1
EDIT SW
S1
S22
COM 0
COM 4
IC701, IC702
REMOTE SENSOR
SIRCS
W703
IR-22P BOARD(1/2)
(See Page 209)
DK-22P BOARD (See Page 203)
CN761
CN206
S773 COUNTER TC/NOR
S765 CLEAR
S762 STOP MOTION
S768 SLOW(+)
S770 AUTO/ STD
S763 FLASH MOTION
S764 MULTI
S767 SLOW(-)
S769 LP/SP
S766 INTERVAL REC
S761 DIGITAL ON
S771 EDIT
OFF
ON
K IN 1
K IN 2
K IN 3
EDIT SW
PJ-22P BOARD
S902 AUDIO MONITOR
S901 EJECT
PCM
MIX
STD
CN903
(See Page 155)
K OUT 4
K OUT 5
K IN 2
K IN 3
K IN 4
CN230
IC601
LANC I/O
CURRENT LIMITER
5.6V REG
VTR UNREG (W223 ①)
SYSTEM RESET
LANC TO CAM
LANC TO LANC
W227
LANC DC
LANC SIG
CN211
HJ-11P BOARD(1/3)
S863 START/ STOP
CN862
(See Page 184)
SW-113P BOARD
CN821
S822 STANDBY
ON
OFF
S821 START/ STOP
CN822
(See Page 203)
K OUT 7
K IN 1
K IN 2
CN208
(See Page 221)
VJ-6P BOARD(1/2)
J813 REMOTE
CN811
LANC SIG
LANC DC
CN205
POWER (VTR DC-DC) (CONVERTER)
VTR POW ON
DM POW ON
CN223
Q109(1/2)
Q108
VTR UNREG (W223 ①)
SERVO
DM PWR ON
DM POWER
IC103
5V REG
Q104
IC104
VOLTAGE DETECT
Q106
Q105
LI-12P BOARD(1/2)
CN801
LITHIUM BATTERY
LI 3V
CN228
(See Page 173)
Q103, 107
RESET
Q101,102
LITHIUM BATTERY DETECT
LITHIUM BATTERY PRE END DETECT
EVER +B
X102 32.768KHz
CT101 CLOCK
X101 4.19MHz
LANC POWERON
XT1
XT2
X1
X2
DM DD ON
VTR DD ON
CLOCK OUT
VDD
BATT IN
LI PRE END
RESET IN
IC101
IC101 55
32.7
MOD


IC101
MODE CONTROL
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K OUT 6
K OUT 7
K OUT 8
K OUT 9
K IN 8
K IN 7
K IN 6
K IN 5
K IN 4
K IN 3
K IN 2
K IN 1
EDIT SW
S1
S22
COM 0
COM 4
DEW
SYSTEM SYNC
VA SP STB
STB CG
SYSTEM RESET
DATA TO SLV
DATA TO MSTR
SCK
CAM DD ON
CS S RAM
Q113,114
DEW DETECT
IC602
CHIP SELECT DECODER
COSMO CS
CAMERA CS
REMOCON CS
TITLE CS
PCM CS
MAKER CS
DM CS
EEPROM CS
IC603
EEPROM
Q109(1/2)
Q601
Q111
Q602,603
DIGITAL TITLE
TITLE CS
S RAMCS
IC102
SIRCS CONTROL
RST
SO
STE LED
PCM LED
C FADER
DM HOLD
X103 700kHz
REMOCON CS
W600
LANC TO LANC
LANC TO CAM
CAM DD ON
CS CAM
FADER
CN801
CAMERA(1) (VC-110P BOARD)
CN224
DM WE
CS DM
S CK
DATA TO SLV
RF SWP
VA PB MODE
MEMORY OFF
TO DIGITAL PICTURE (DI-210 BOARD)
32.77kHz
1.3Vp-p
IC101 (55) CAM REC
LANC POWERON
X102 32.768kHz
CT101 CLOCK
4Vp-p
4.19MHz
X101 4.19MHz
IC101 (58) CAM REC
DM DD ON
VTR DD ON
CLOCK OUT
EVER +B
VDD
BATT IN
L1 PRE END
RESET IN
FADER PWM
Q112
LPF
D601
CN225
FADER CONT
CS MARKER
CS PCM
PCM SP STB
PCM ACT
TO PCM AUDIO (PC-52P BOARD)
PCM SP STB
PCM ACTIVE
5Vpp
IC001 (11) REC/PB
(See Page 174)
SS-146P BOARD (SYSTEM CONTROL)
CN002
DEW(+)
DEW SENSOR
IC001 (1/2)
MECHANISM CONTROL
IRIS VR
SYSTEM SYNC
CS COSMO
SYSTEM RESET
DATA TO SLVE
DATA TO MSTR
FERA
PCM INHIBIT
AF REC
MONO/STE DET
XTAL
EXTAL
X001 16MHz
MOTOR UNREG (CN501 (1))
BATTERY SENS
DM WE
SYSTEM CONTROL
MEMORY OFF
3.5Vp-p
16MHz
IC001 (34) REC/PB
(SEE SERVO BLOCK)
CAP FWD/RVS
RF SW P
COMP SYNC
SERVO
T/S LED
T/E LED
REC PROOF SW
HG SW
ME/MP SW
T REEL FG
S REEL FG
END SENS
TOP SENS
MODE SW0
MODE SW1
MODE SW2
CC DOWN SW
CLOG
LOAD
UNLOAD
RP PB MODE
FE ON
H:8 DET
H CHG
SP/LP
VA PB MODE
V1 SWP
JOG
JOG VD
PB SP/LP
Q003
TAPE TOP DETECT
Q005
LED DRIVE
Q001
TAPE END DETECT
5V (Q006)
IC003 (1/2)
CLOG DET
Q501
Q014
Q013(1/2)
PB RF DETECT
DC REFERENCE
IC002
LOADING MOTER DRIVE
Vcc
CN003
L.M LOAD
L.M UNLOAD
LOADING MOTOR
Q006,007
5V REG
MOTOR UNREG (CN501 (2))
IC003 (1/2)
VOLTAG ERROR AMP
2.5V
IC005
D1 DOP GENERATOR
Q020,021
W006
REEL LED
T REEL FG
TOP SENS
TOP END LED
REC PROOF
HG SW
ME/MP
LM 5V
S REEL FG
END SENS
CC-73P BOARD
CN702
CN703
CN701
(See Page 213)
FP-90P BOARD
(See Page 213)
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSER
D302 TAPE LED
S302
TAPE LED
REC PROOF
MPHG
ME/MP
COM
REC PROOF MP HG ME/MP
FP-89P BOARD
(See Page 213)
D301 S REEL FG SENSOR
Q301 TAPE END SENSOR
MODE SW 0
MODE SW 1
MODE SW 2
CC DOWN
COM
MODE SWITCH
RP PB MODE (SERVO)
VIDEO(1) BLOCK
VI-100 BOARD (See Page 145)
D005
Q010
W001
W403
RP PB MODE
FE ON
E DET
DL SWP
D1 DOP
PB RF
SP/LP
VA PB MODE
V1 SWP
JOG
JOG VD
COMP SYNC
PB SP/LP
CN404
RF SWP
E/L
ME/MP
CN405
AGC SLOW
TO VIDEO(2) (MR-30 BOARD)
PB RF
VA PB MODE
V1 SWP
JOG
JOG VD
COMP SYNC
PB SP/LP
IC405
EXPANTION PORT
STB
DATA
SCK
OE
E/L
ME/MP
EDIT
CAM/LINE
V MUTE
TALLY
AGC SLOW
DS ON
DATA SCREEN ON
VIDEO(1)
DATA TO SLVE
SCK
RST
CG STB
VA SP STB
DATA TO SLVE
CG STB
MEMORY OFF
DM HOLD
MEMORY OFF
DM HOLD
CN402
TALLY
TO EVF (VF-13P BOARD)
IC408
SYNC DET
D254
CN409
CAM/LINE
DOC P
CN406
TO DIGITAL PICTURE (DI-21P BOARD)
D030
Q030
W002
RF SWP
DL SWP
PCM INH
AF REC
SCK
DATA TO MASTER
DATA TO SLV
VA PB MODE
SYSTEM RESET
SYSTEM SYNC
FE RS
FE RA
SP/LP
MONO/STE DET
TO PCM AUDIO (PC-52P BOARD)
H
REC:2Vp-p PB:4Vp-p
IC001 (58) REC/PB
2V
5Vp-p
IC001 (80) REC/PB

3-12. SYSTEM CONTROL INTERFACE

3-12-1. Servo/System Control IC Pin Functions

- **SS-146P board IC001 (CXP80116)**

Pin No.	Port name	I/O	Active	Function
1	SEL2	O	H	ATF REF PILOT signal frequency control ATF REF PILOT: f1, f2, f3, f4 SEL 1: H, L, H, L SEL 2: H, H, L, L
2	SEL1	O	H	
3	$\overline{\text{DMWE}}$	O	L	Permission for memory writing
4	VISWP	O	H	25 Hz, duty 50% signal, when PB
5	$\overline{\text{DRUM ACCEL}}$	O	L	Drum acceleration signal when SLOW, etc.
6	DRUM BRAKE	O	H	Drum deceleration signal when SLOW, etc.
7	JOG	O	H	Normal/variable speed playback selecting signal for video circuit
8		—	—	Not used
9	FERA	O	H	Video mask area when dubbing (AUDIO DUB)
10	H CHG	O	H	Head selecting signal when SLOW/STILL
11	SYSTEM SYNC	O	H	Vd signal synchronized to Comp sync input
12	SP/$\overline{\text{LP}}$	O	H	SP: H, LP: L (mode selecting output)
13	$\overline{\text{MEMORY OFF}}$	O	H	MEMORY/THROUGH selecting signal, H: MEMORY, L: THROUGH
14	VA PB MODE	O	H	REC/PB selecting signal for video, audio circuits
15	UNLOAD	O	H	Control signal for loading motor, H: UNLOADING
16	LOAD	O	H	Control signal for loading motor, H: LOADING
17	CAP ON2			Not used
18	AF REC	O	H	Hi signal output during after recording mode
19	ME/$\overline{\text{MP}}$ SW	I	L	ME/MP tape recognition input. H: ME tape
20	$\overline{\text{HG SW}}$	I	L	Hi8 MP tape recognition input. L: Hi8 MP tape
21	$\overline{\text{REC PROOF SW}}$	I	L	REC PROOF recognition input. H: Rec inhibit
22	$\overline{\text{MODE SW 2}}$	I	L	Mechanical position input Mechanism position: EJECT, IA, ULD, IB, STOP, IC, FWD $\overline{\text{MODE SW 0}}$: H, H, H, H, L, L, L $\overline{\text{MODE SW 1}}$: H, H/L, L, L, L, H, H $\overline{\text{MODE SW 2}}$: L, L, L, H, H, H, L
23	$\overline{\text{MODE SW 1}}$	I	L	
24	$\overline{\text{MODE SW 0}}$	I	L	
25	$\overline{\text{CC DOWN SW}}$	I	L	Cassette compartment down switch input. L: Cassette compartment down
26	$\overline{\text{DRUM ON}}$	O	L	Drum motor ON/OFF signal. L: drum ON
27	$\overline{\text{T/E LED}}$	O	H	LED control signal for TOP/END detection of tape
28	$\overline{\text{T/S LED}}$	O	L	LED control signal for reel rotation detection
29	$\overline{\text{PCM INHIBIT}}$	O	L	PCM recording inhibit signal, Normal: Hi-z, Inhibit: L
30	$\overline{\text{EDIT}}$			Not used
31	N.C	I		Fixed to "LOW"
32	$\overline{\text{SYSTEM RESET}}$	I	L	Reset signal input pin from mode controller
33	GND			
34	XTAL			Pin to connect 16 MHz crystal oscillator
35	EXTAL	I		
36	$\overline{\text{CS COSMO}}$	I	L	Chip select signal from mode control microprocessor
37	DATA TO SLVE	I	H	Data that send from mode control microprocessor to servo/system control microprocessor
38	DATA TO MSTR	O	H	Data that send from servo/system control microprocessor to mode control microprocessor
39	$\overline{\text{SCK}}$	I	L	Clock from mode control microprocessor
40	PCM ACT			Not used, Fixed to "L"

Pin No.	Port name	I/O	Active	Function
41	Hi8 DET	I	H	Auto discrimination result for playback, H: Hi-8, L: NORMAL
42	$\overline{\text{S JACK IN}}$	I	L	Fixed to "L", not used
43	$\overline{\text{MONO}}$/STE DET	I	H	Mode discrimination result for AFM, H: STEREO, L: MONO
44	TOP SENS	I	H	Tape top detection signal
45	END SENS	I	H	Tape end detection signal
46	T REEL FG	I	H	T reel table rotation detection signal
47	S REEL FG	I	H	S reel table rotation detection signal
48	BATT SENS	I		Battery level detection signal
49	IRIS VR	I		IRIS VR input pin
50	SW POSI ADJ	I		Position adjustment for PF SWP
51	ATF ERROR	I		ATF error (ATF lock)
52	AVss			GND pin of A/D converter
53	AVref	I		Reference voltage input pin of A/D converter
54	AVDD			Positive power supply pin of A/D converter
55	DRUM PG	I	H	Drum PG input pin, 50 Hz
56	DRUM PG	I		Drum PG input pin
57	CLOG DET	I	H	PB RF detection result input, existence/no existence
58	COMP SYNC	I	H	Video composite sync input pin
59	PB SP/$\overline{\text{LP}}$ DET	I	H	SP/LP detection signal when PB
60	DRUM PG	I	H	Drum PG input pin
61	DRUM FG	I	H	Drum PG input pin, 600 Hz, duty 50%
62	CAP FG	I	H	Capstan FG input
63	MONO/$\overline{\text{STEREO}}$			Not used
64	SYNC IN			Not used
65	CAP D/A	O	H	Capstan servo control signal
66	DRUM D/A	O	H	Drum servo control signal
67	CAP PWM	O	H	PWM output pin for CAP error output (Servo exclusive output pin)
68	DRUM RVS	O	H	Drum motor forward/reverse rotation control signal
69	CAP FG	I	H	Capstan FG input, SP: 1325 Hz, duty 50%
70	JC MONO/STE DET	—	—	Not used
71	SS 5V			Fixed to "H"
72	SS 5V			Positive power supply pin
73	GND			GND pin
74	———	—	—	Not used
75	CAP ON	O	H	Capstan motor ON/OFF signal
76	CAP FWD	O	H	Capstan motor forward/reverse rotation control signal
77	$\overline{\text{RP PB MODE}}$	O	L	REC/PB selecting signal for REC/PB amplifier
78	FE ON(FERS)	O	H	Flying erase oscillation ON, OFF signal
79	JOG VD	O	H	Pseudo VD signal when variable speed mode
80	RF SWP	O	H	RF switching pulse output pin (25Hz when PB, duty 50%)

* Active indicates positive logic of signal. In case it is edge, it functions as "H".

3-12-2. Mod

- **SS-146P b**

Pin No.	P
1	S12
2	S13
3	S14
4	S15
5	S16
6	S17
7	S18
8	S19
9	S20
10	S21
11	S22
12	S23
13	STB C
14	PCM S
15	$\overline{\text{VA SP}}$
16	CS SR
17	SEL A
18	SEL B
19	SEL C
20	SEL D
21	COM
22	COM
23	COM
24	COM
25	BIAS
26	Vcc 0
27	Vcc 1
28	Vcc 2
29	$\overline{\text{VTR}}$
30	$\overline{\text{CAM}}$
31	$\overline{\text{DM D}}$
32	FADE
33	Vss
34	$\overline{\text{K OU}}$
35	$\overline{\text{K OU}}$
36	$\overline{\text{K OU}}$
37	$\overline{\text{K OU}}$
38	$\overline{\text{BATT}}$
39	$\overline{\text{CLK}}$
40	DATA

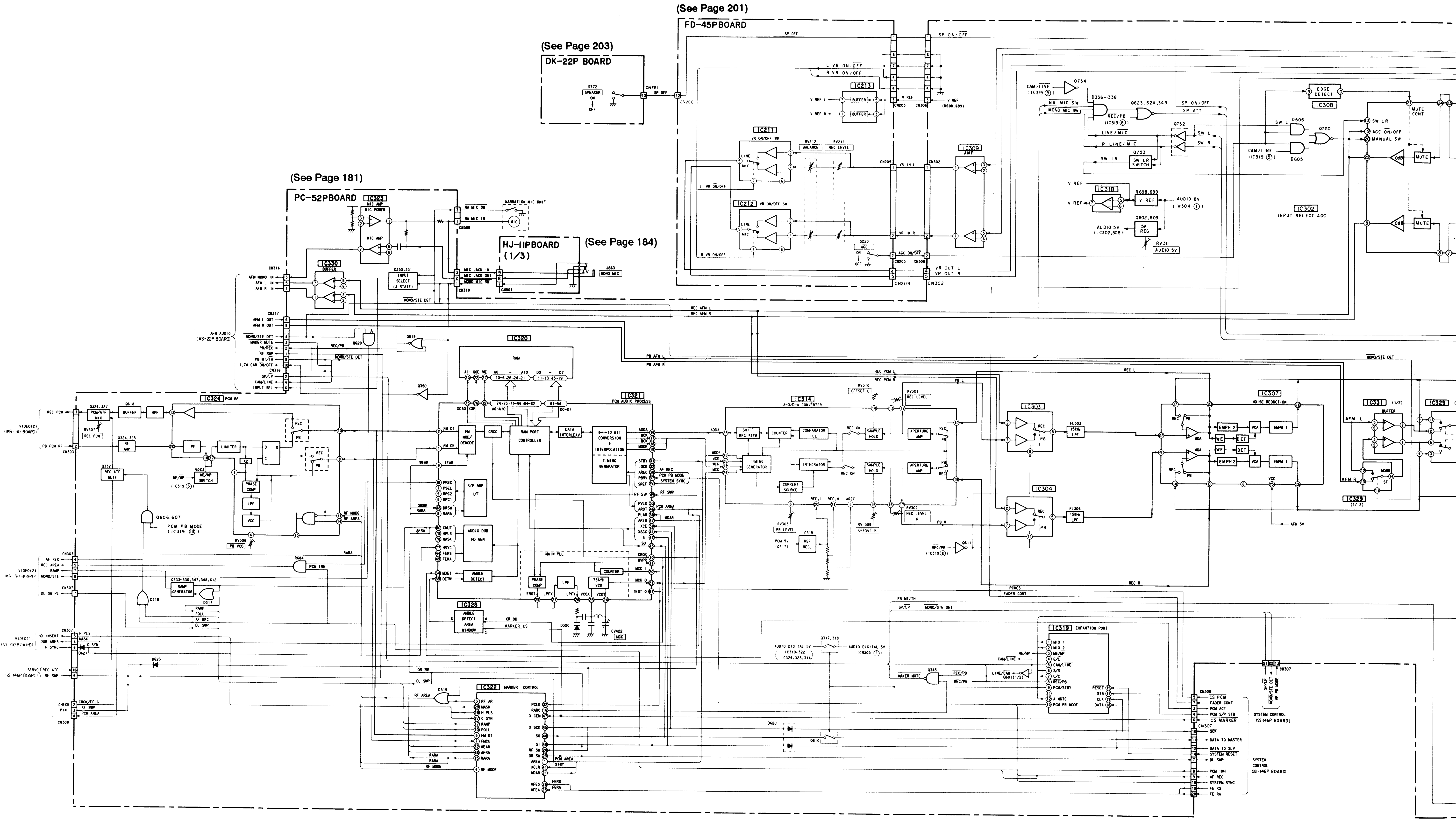
3-12-2. Mode Control IC Pin Function

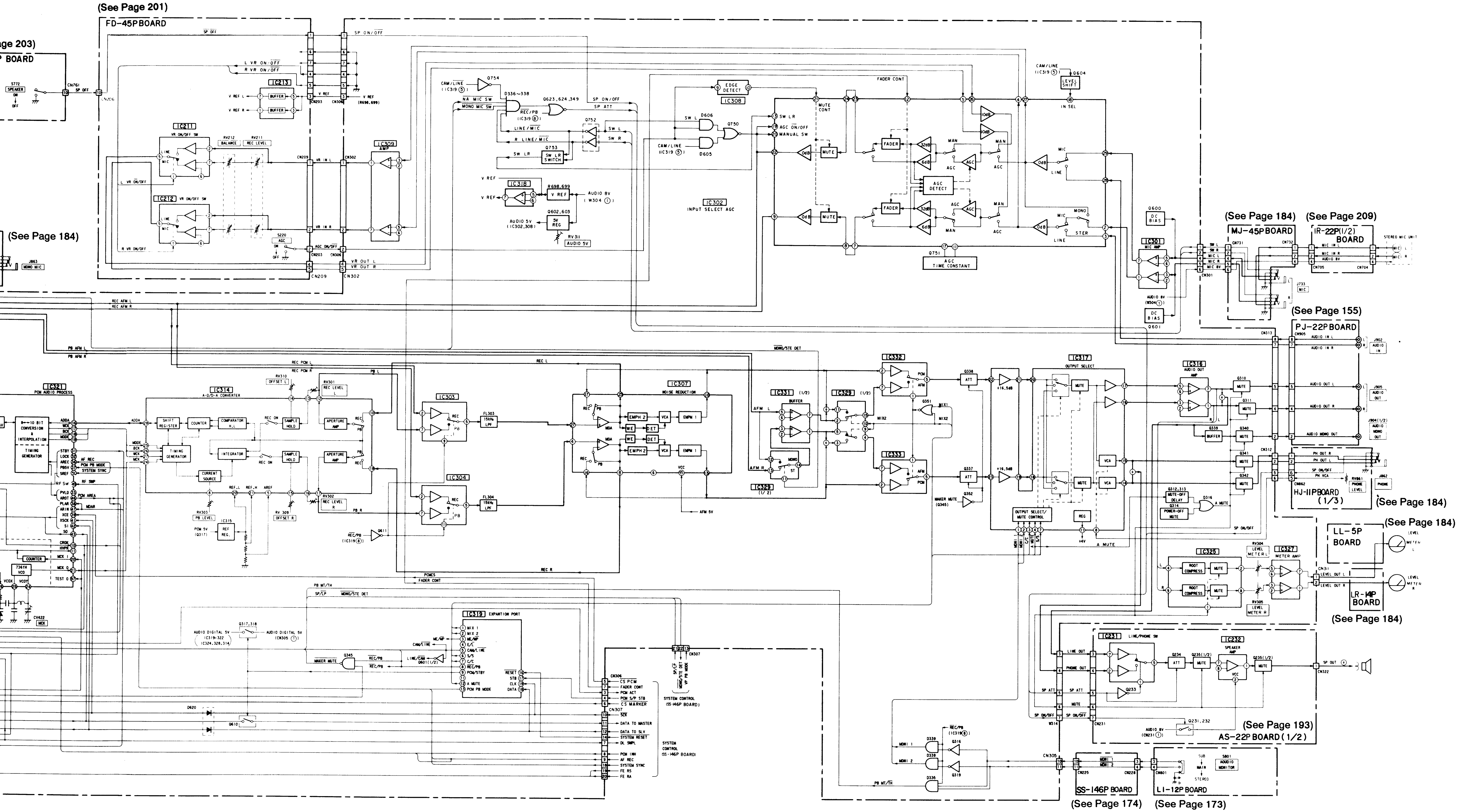
- **SS-146P board IC101 (μPD75316)**

Pin No.	Port name	I/O	Active	Function
1	S12	O	*	LCD segment drive signal
2	S13	O	*	
3	S14	O	*	
4	S15	O	*	
5	S16	O	*	
6	S17	O	*	
7	S18	O	*	
8	S19	O	*	
9	S20	O	*	
10	S21	O	*	
11	S22	O	*	
12	S23	O	*	—
13	STB CG	O	H	Strobe signal for character generator (IC407 on VI-100 board)
14	PCM SP STB	O	H	Strobe signal for PCM serial/parallel (IC319 on PC-52P board)
15	$\overline{\text{VA SP STB}}$	O	H	Strobe signal for video serial/parallel (IC405 on VI-100 board)
16	CS SRAM	O	H	Chip select signal to SRAM (IC805 on SS-146P board)
17	SEL A	O		Encoded chip select signals. Decoded to 8 chip select signals by IC602 COSMO CS : Chip select signal to mechanism control microprocessor (IC001 on SS-146P board) CAMERA CS : Chip select signal to camera control microprocessor (IC501 on VC-110P board) REMOCON CS: Chip select signal to SIRCS control microprocessor (IC102 on SS-146P board) $\overline{\text{TITLE CS}}$: Chip select signal to titler microprocessor (IC804 on SS-146P board) PCM CS : Chip select signal to PCM RAM controller (IC321 on PC-52P board) MAKER CS : Chip select signal to INDEX marker controller (IC322 on PC-52P board) EEPROM CS : Chip select signal to EEPROM (IC603 on SS-146P board)
18	SEL B	O		
19	SEL C	O		
20	SEL D	O		
21	COM 0	O	*	LCD drive signal
22	COM 1	O	*	
23	COM 2	O	*	
24	COM 3	O	*	
25	BIAS	O		Fixed to "L"
26	Vcc 0	I		Power supply pin for LCD drive
27	Vcc 1	I		
28	Vcc 2	I		
29	$\overline{\text{VTR DD ON}}$	O	L	Power supply ON/OFF signal for camera
30	$\overline{\text{CAM DD ON}}$	O	L	Power supply ON/OFF signal for VTR
31	$\overline{\text{DM DD ON}}$	O	L	Power supply ON/OFF signal for digital memory
32	FADER PWM	O	L	PWM signal output for camera fader
33	Vss	—	—	—
34	$\overline{\text{K OUT 1}}$	O	L	Key matrix output 0
35	$\overline{\text{K OUT 2}}$	O	L	Key matrix output 1
36	$\overline{\text{K OUT 3}}$	O	L	Key matrix output 2
37	$\overline{\text{K OUT 4}}$	O	L	Key matrix output 3
38	$\overline{\text{BATT IN}}$	I	L	Detection of battery pack presence
39	$\overline{\text{CLK}}$	I/O	L	O: clock from mode controller, I: clock from camera microprocessor
40	DATA TO SLV	O	H	Data that send from mode controller to servo/system controller
41	DATA TO MST	I	H	Data that send from other microprocessors to mode controller
42	SYSTEM SYNC	I	L	System sync
43	LI PRE END	I	L	Lithium battery PRE END input
44	LANC POWER ON	I	L	Power OFF to ON input signal from remote commander
45	PCM ACTIVE	I	H	PCM audio active signal
46	$\overline{\text{K OUT 5}}$	O	L	Key matrix output 5
47	$\overline{\text{K OUT 6}}$	O	L	Key matrix output 6
48	$\overline{\text{K OUT 7}}$	O	L	Key matrix output 7
49	$\overline{\text{K OUT 8}}$	O	L	Key matrix output 8
50	$\overline{\text{K OUT 9}}$	O	L	Key matrix output 9
51	$\overline{\text{EDIT SW}}$	I	L	Edit switch input
52	DEW SENS	I	L	Dew detection signal
53	$\overline{\text{SYSTEM RESET}}$	O	L	AF/servo system controller reset signal output pin when power supply ON
54	VDD	—	—	Positive power supply input pin
55	XT1	I		Pin to connect clock oscillator for clock
56	XT2	I		
57	———	—	—	Not used
58	X1	I		Pin to connect main clock oscillator
59	X2	I		
60	K IN 1	I	L	Key matrix input 1
61	K IN 2	I	L	Key matrix input 2
62	K IN 3	I	L	Key matrix input 3
63	K IN 4	I	L	Key matrix input 4
64	K IN 5	I	L	Key matrix input 5
65	K IN 6	I	L	Key matrix input 6
66	K IN 7	I	L	Key matrix input 7
67	K IN 8	I	L	Key matrix input 8
68	$\overline{\text{RESET IN}}$	I	L	Reset signal input pin
69	CLOCK OUT	O		Clock output pin for clock precision adjustment
70	S1	O	*	LCD segment drive signal
71	S2	O	*	
72	S3	O	*	
73	S4	O	*	
74	S5	O	*	
75	S6	O	*	
76	S7	O	*	
77	S8	O	*	
78	S9	O	*	
79	S10	O	*	
80	S11	O	*	

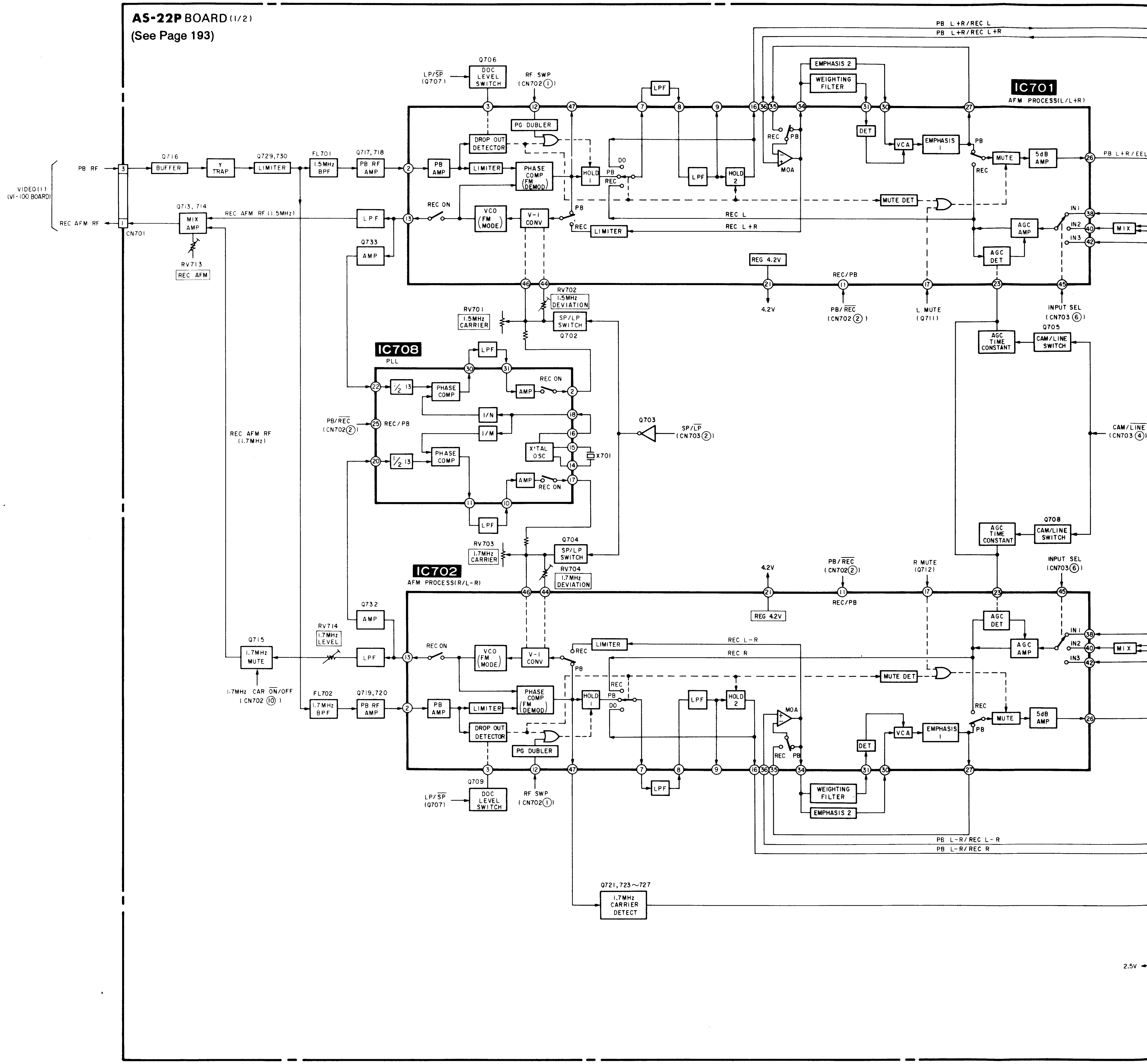
* Active indicates positive logic of signal. In case it is edge, it functions as "H". LCD is 1/4 duty.

3-13. PCM AUDIO BLOCK DIAGRAM


(See Page 201)
FD-45P BOARD
(See Page 203)
DK-22P BOARD
S772 SPEAKER
ON
OFF
CN761
SP OFF
L VR ON/OFF
R VR ON/OFF
IC213
BUFFER
V REF L
V REF R
V REF
CN203
CN304
IC211
VR ON/OFF SW
RV212 BALANCE
RV211 REC LEVEL
IC212
LINE
MIC
L VR ON/OFF
R VR ON/OFF
CN209
VR IN L
VR IN R
S220 AGC
AGC ON/OFF
VR OUT L
VR OUT R
CN302
IC309 AMP
SP ON/OFF
CAM/LINE (IC319 ⑤)
Q754
NA MIC SW
MONO MIC SW
D336~338
REC/PB (IC319 ⑧)
Q623,624,349
SP ATT
LINE/MIC
R LINE/MIC
Q752
SW L
SW R
Q753 SW LR SWITCH
SW LR
V REF
IC318
R698,699
AUDIO 8V (W304 ①)
Q602,603
5V REG
AUDIO 5V (IC302,308)
RV311
AUDIO 5V
EDGE DETECT
IC308
D606
Q750
D605
CAM/LINE (IC319 ⑤)
SW LR
AGC ON/OFF
MANUAL SW
MUTE CONT
0dB
MUTE
IC302
INPUT SELECT AGC
(See Page 181)
PC-52P BOARD
IC323
MIC AMP
MIC POWER
NA MIC SW
NA MIC IN
NARRATION MIC UNIT
MIC
CN309
HJ-11P BOARD (1/3)
(See Page 184)
J863
MONO MIC
MIC JACK IN
MIC JACK OUT
MONO MIC SW
CN310
CN861
IC330
BUFFER
Q330,331
INPUT SELECT (3 STATE)
MONO/STE DET
CN316
AFM MONO IN
AFM L IN
AFM R IN
CN317
AFM L OUT
AFM R OUT
MONO/STE DET
MAKER MUTE
PB/REC
RF SWP
PB MT/TH
1.7M CAR ON/OFF
SP/LP
CAM/LINE
INPUT SEL
AFM AUDIO (AS-22P BOARD)
REC/PB
Q620
Q619
Q350
REC AFM L
REC AFM R
PB AFM L
PB AFM R
IC320
RAM
A11 XOE WE A0 - A10 D0 - D7
IC324 PCM RF
REC PCM
Q326,327 PCM/ATF MIX
D618 BUFFER
HPF
RV307 REC PCM
VIDEO(2) (MR-30 BOARD)
PB PCM RF
CN303
Q324,325 RF AMP
LPF
LIMITER
Q332 REC ATF MUTE
Q323 ME/MP SWITCH
ME/MP (IC319 ③)
PHASE COMP
VCO
RV306 PB VCO
RF MODE
RF AREA
Q606,607
PCM PB MODE (IC319 ⑬)
AF REC
REC AREA
RAMP
MONO/STE
DL SW PL
R684
PCM INH
RARA
Q333~336,347,348,612
RAMP GENERATOR
D317
D318
RAMP
FOLL
AF REC
DL SWP
CN307
VIDEO(1) (VC-KO BOARD)
HD INSERT
DUB AREA
H SYNC
H PLS
MASK
C SYN
D621
D623
SERVO (SS-146P BOARD)
REC ATF
RF SWP
CHECK PIN
CROK/EFLG
PCM AREA
CN308
IC321
PCM AUDIO PROCESS
FM DT
FM CK
FM MOD/DEMODE
CRCC
RAM PORT CONTROLLER
DATA INTERLEAV
8↔10 BIT CONVERSION & INTERPOLATION
TIMING GENERATOR
WEAR
IEAR
PREC
PSEL
RPC2
RPC1
RARA
R/P AMP I/F
DRSW
CMUT
HPLS
MASK
HSYC
FERS
FERA
AUDIO DUB HD GEN
AFRA
MDET
DETW
AMBLE DETECT
MAIN PLL
PHASE COMP
LPF
736FH VCO
COUNTER
EROT LPFX LPFY VCOX VCOY
ADDA
MCK
BCK
MODE
STBY
LOCK
AREC
PBSV
SREF
AF REC
PCM PB MODE
SYSTEM SYNC
RF SW
RF SWP
PVLD
AROT
PLAR
ARIN
XCE
XSCK
SI
SO
CROK
HVPR
PCM AREA
MDAR
TEST 0
D320
CV422
MCK
IC328
AMBLE DETECT AREA WINDOW
CR OK
MARKER CS
IC314
A-D/D-A CONVERTER
SHIFT REGISTER
COUNTER
COMPARATOR H,L
TIMING GENERATOR
INTEGRATOR
CURRENT SOURCE
REC ON
SAMPLE HOLD
APERTURE AMP
RV310 OFFSET L
RV301 REC LEVEL L
RV302 REC LEVEL R
RV303 PB LEVEL
IC315 REF REG.
PCM 5V (Q317)
RV309 OFFSET R
REF L REF H AREF
REC PCM L
REC PCM R
PB L
PB R
IC303
IC304
FL303 15kHz LPF
FL304 15kHz LPF
REC/PB (IC319 ⑥)
Q611
REC L
REC R
PCMCS
FADER CONT
IC307
NOISE REDUCTION
EMPH 2
WE
DET
VCA
EMPH 1
VCC
AFM 5V
IC331 (1/2) BUFFER
AFM L
AFM R
MONO
ST
IC329 (1/2)
MONO/STE DET
PB MT/TH
SP/LP
MONO/STE DET
AUDIO DIGITAL 5V (IC319~322) (IC324,328,314)
Q317,318
AUDIO DIGITAL 5V (CN305 ①)
MAKER MUTE
Q345
REC/PB
IC319 EXPANTION PORT
MIX 1
MIX 2
ME/MP
E/C
CAM/LINE
S/S
C/C
REC/PB
PCM/STBY
A MUTE
PCM PB MODE
LINE/CAM Q601(1/2)
RESET
STB
CLK
DATA
D420
Q610
DR SW
DL SWP
RF AREA
D319
IC322 MARKER CONTROL
RF AR
MASK
H PLS
C SYN
RAMP
FOLL
FM DT
FMCK
WEAR
AFRA
RARA
RF MODE
PCLK
RARC
X CEM
X SCK
SO
SI
RF SW
DR SW
AREA
XCLR
MDAR
MFES
MFEA
PCM AREA
STBY
FERS
FERA
CN306
CS PCM
FADER CONT
PCM ACT
PCM S/P STB
CS MARKER
CN307
SCK
DATA TO MASTER
DATA TO SLV
SYSTEM RESET
DL SWPL
PCM INH
AF REC
SYSTEM SYNC
FE RS
FE RA
SYSTEM CONTROL (SS-146P BOARD)

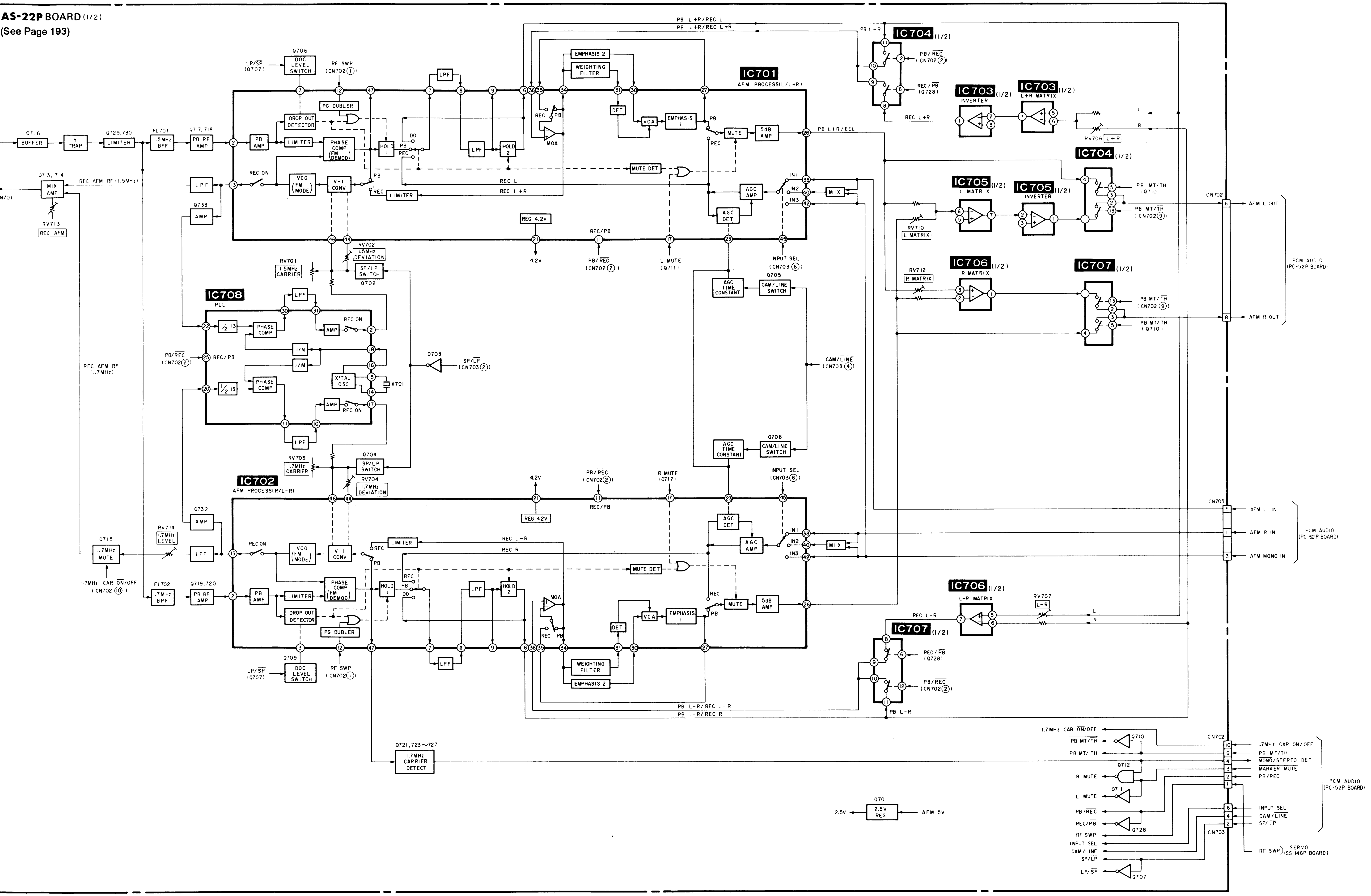

(See Page 201)
FD-45P BOARD
age 203)
P BOARD
(See Page 184)
S772 SPEAKER
CN761
SP OFF
IC211
IC212
IC213
BUFFER
RV212 BALANCE
RV211 REC LEVEL
L VR ON/OFF
R VR ON/OFF
V REF
CN203
CN209
CN302
CN306
S220 AGC
VR IN L
VR IN R
AGC ON/OFF
VR OUT L
VR OUT R
IC309 AMP
SP ON/OFF
CAM/LINE
Q754
D336~338
Q623,624,349
NA MIC SW
MONO MIC SW
REC/PB
SP ATT
Q752
Q753 SW LR SWITCH
LINE/MIC
IC318
V REF
R698,699
AUDIO 8V
Q602,603 5V REG
RV311 AUDIO 5V
IC308 EDGE DETECT
D606
D605
Q750
SW L
SW R
MANUAL SW
IC302 INPUT SELECT AGC
FADER CONT
MUTE CONT
0dB
MUTE
FADER
32dB
64dB
10dB
AGC DETECT
MAN
AGC
Q751 AGC TIME CONSTANT
Q604 LEVEL SHIFT
IN SEL
MIC
LINE
MONO
STER
Q600 DC BIAS
Q601 DC BIAS
IC301 MIC AMP
CN301
(See Page 184)
MJ-45P BOARD
(See Page 209)
IR-22P(1/2) BOARD
STEREO MIC UNIT
J733 MIC
(See Page 155)
PJ-22P BOARD
J902 AUDIO IN
J905 AUDIO OUT
J904(1/2) AUDIO MONO OUT
REC AFM L
REC AFM R
PB AFM L
PB AFM R
IC321 PCM AUDIO PROCESS
10 BIT CONVERSION & INTERPOLATION
TIMING GENERATOR
COUNTER
7361H VCO
CV422 MCK
IC314 A-D/D-A CONVERTER
SHIFT REGISTER
COUNTER
COMPARATOR H.L
SAMPLE HOLD
APERTURE AMP
INTEGRATOR
CURRENT SOURCE
TIMING GENERATOR
RV310 OFFSET L
RV301 REC LEVEL L
RV302 REC LEVEL R
RV303 PB LEVEL
RV309 OFFSET R
IC315 REF REG.
REC L
REC R
PB L
PB R
IC303
IC304
FL303 15kHz LPF
FL304 15kHz LPF
Q611
IC307 NOISE REDUCTION
EMPH 2
EMPH 1
VCA
DET
MDA
AFM 5V
MONO/STE DET
IC331 (1/2) BUFFER
IC329 (1/2)
IC332
IC333
Q351
MIX1
MIX2
Q352
MAKER MUTE (Q345)
Q336 ATT
Q337 ATT
+16.5dB
IC317 OUTPUT SELECT
OUTPUT SELECT/MUTE CONTROL
REG
A MUTE
IC316 AUDIO OUT AMP
Q310
Q311
Q339 BUFFER
Q340
Q341
Q342
Q312,313 MUTE-OFF DELAY
Q314 POWER-OFF MUTE
D316
SP ON/OFF
CN313
CN312
CN905
CN862
AUDIO IN L
AUDIO IN R
AUDIO OUT L
AUDIO OUT R
AUDIO MONO OUT
PH OUT R
PH OUT L
SP ON/OFF
PH VCA
RV861 PHONE LEVEL
J862 PHONE
HJ-11P BOARD (1/3)
(See Page 184)
IC325
ROOT COMPRESS
RV304 LEVEL METER L
RV305 LEVEL METER R
IC327 METER AMP
CN311
LEVEL OUT L
LEVEL OUT R
LL-5P BOARD
LR-14P BOARD
(See Page 184)
LEVEL METER L
LEVEL METER R
IC319 EXPANTION PORT
MIX 1
MIX 2
ME/MP
E/C
CAM/LINE
S/S
C/C
REC/PB
PCM/STBY
A MUTE
PCM PB MODE
RESET
STB
CLK
DATA
Q317,318
AUDIO DIGITAL 5V
Q345
MAKER MUTE
Q601(1/2)
PB MT/TH
SP/LP
MONO/STE DET
CN306
CS PCM
FADER CONT
PCM ACT
PCM S/P STB
CS MARKER
CN307
SCK
DATA TO MASTER
DATA TO SLV
SYSTEM RESET
DL SMPL
PCM INH
AF REC
SYSTEM SYNC
FE RS
FE RA
SYSTEM CONTROL (SS-146P BOARD)
D620
D610
IC231 LINE/PHONE SW
IC232 SPEAKER AMP
LINE OUT
PHONE OUT
SP ATT
MUTE
SP ON/OFF
Q234 ATT
Q235(1/2)
Q233
Q231,232
AUDIO 8V
CN231
CN322
SP OUT
(See Page 193)
AS-22P BOARD (1/2)
D339
Q316
Q319
D335
MONI 1
MONI 2
CN305
CN225
CN228
CN601
S801 AUDIO MONITOR
SUB
MAIN
STEREO
SS-146P BOARD
LI-12P BOARD
(See Page 174)
(See Page 173)

3-14. AFM AUDIO BLOCK DIAGRAM

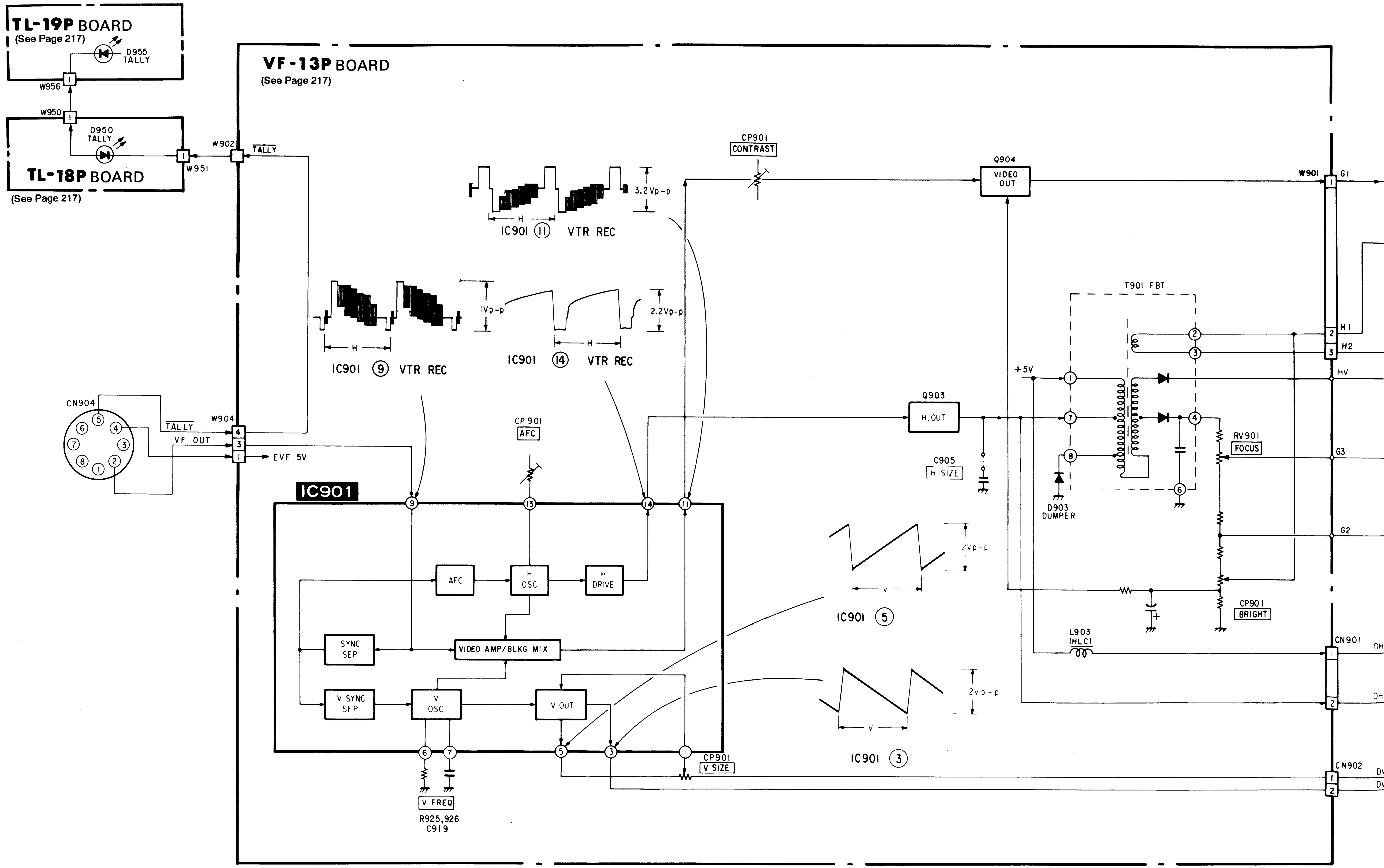

AS-22P BOARD (1/2)
(See Page 193)
VIDEO (1) (VI-100 BOARD)
PB RF
REC AFM RF
CN701
Q716 BUFFER
Y TRAP
Q729,730 LIMITER
FL701 1.5MHz BPF
Q717,718 PB RF AMP
Q713,714 MIX AMP
RV713 REC AFM
REC AFM RF (1.5MHz)
Q733 AMP
LPF
Q706 DOC LEVEL SWITCH
LP/SP (Q707)
RF SWP (CN702 ①)
IC701
AFM PROCESS(L/L+R)
PB AMP
DROP OUT DETECTOR
LIMITER
PG DUBLER
PHASE COMP (FM DEMOD)
HOLD 1
HOLD 2
REC ON
VCO (FM MODE)
V-I CONV
LIMITER
EMPHASIS 2
WEIGHTING FILTER
MOA
DET
VCA
EMPHASIS 1
MUTE
5dB AMP
MUTE DET
AGC AMP
AGC DET
MIX
IN1
IN2
IN3
REC L
REC L+R
PB L+R/REC L
PB L+R/REC L+R
PB L+R/EEL
REG 4.2V
4.2V
REC/PB
PB/REC (CN702 ②)
L MUTE (Q711)
INPUT SEL (CN703 ⑥)
Q705 CAM/LINE SWITCH
AGC TIME CONSTANT
RV702 1.5MHz DEVIATION
RV701 1.5MHz CARRIER
SP/LP SWITCH Q702
IC708 PLL
1/2 13
PHASE COMP
I/N
I/M
X'TAL OSC
X701
AMP
PB/REC (CN702 ②)
REC/PB
Q703
SP/LP (CN703 ②)
CAM/LINE (CN703 ④)
REC AFM RF (1.7MHz)
Q704 SP/LP SWITCH
RV703 1.7MHz CARRIER
RV704 1.7MHz DEVIATION
IC702
AFM PROCESS(R/L-R)
Q732 AMP
RV714 1.7MHz LEVEL
Q715 1.7MHz MUTE
1.7MHz CAR ON/OFF (CN702 ⑩)
FL702 1.7MHz BPF
Q719,720 PB RF AMP
REC L-R
REC R
R MUTE (Q712)
Q708 CAM/LINE SWITCH
Q709 DOC LEVEL SWITCH
PB L-R/REC L-R
PB L-R/REC R
Q721,723~727 1.7MHz CARRIER DETECT
2.5V

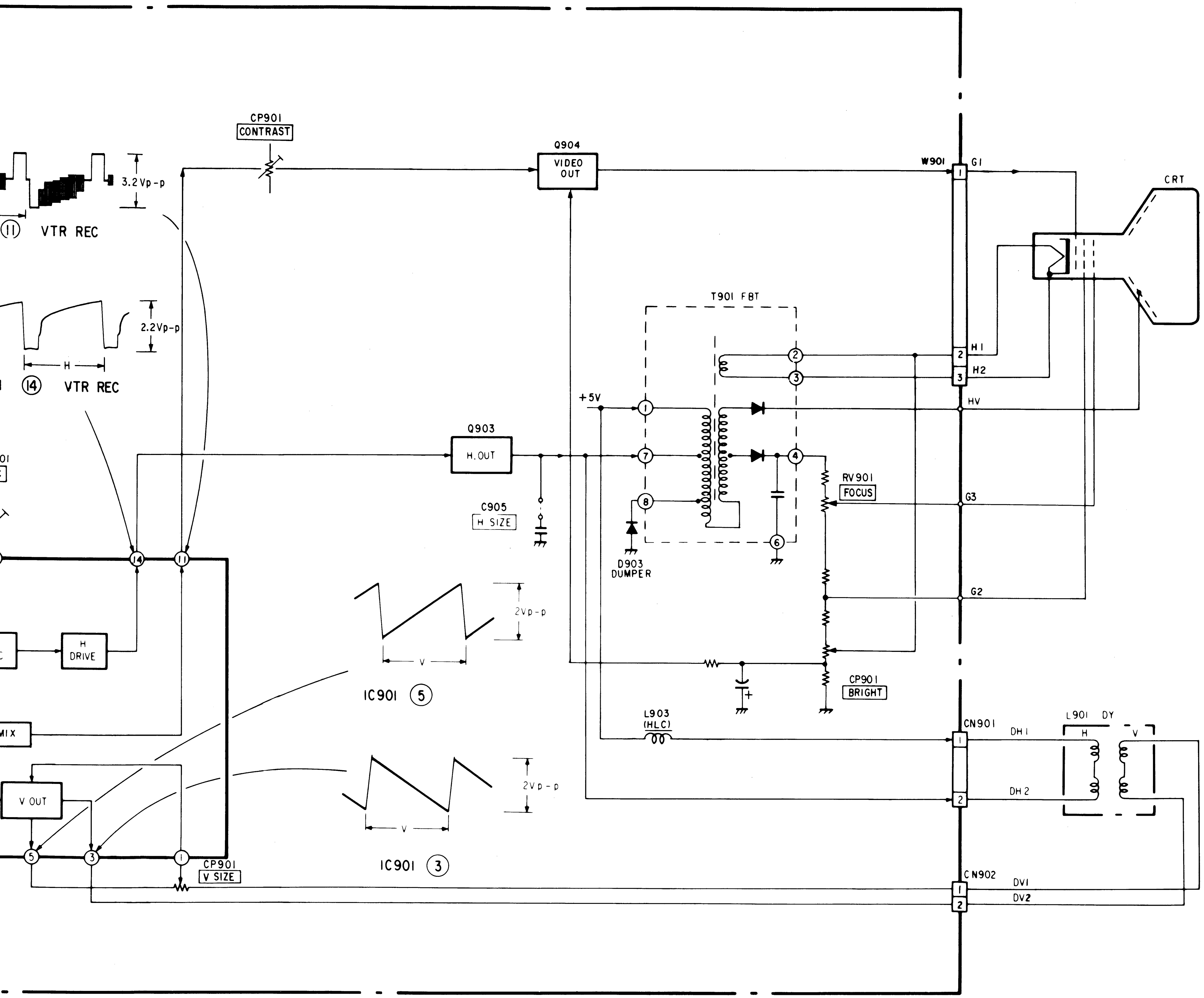
CK DIAGRAM

AS-22P BOARD (1/2)
(See Page 193)

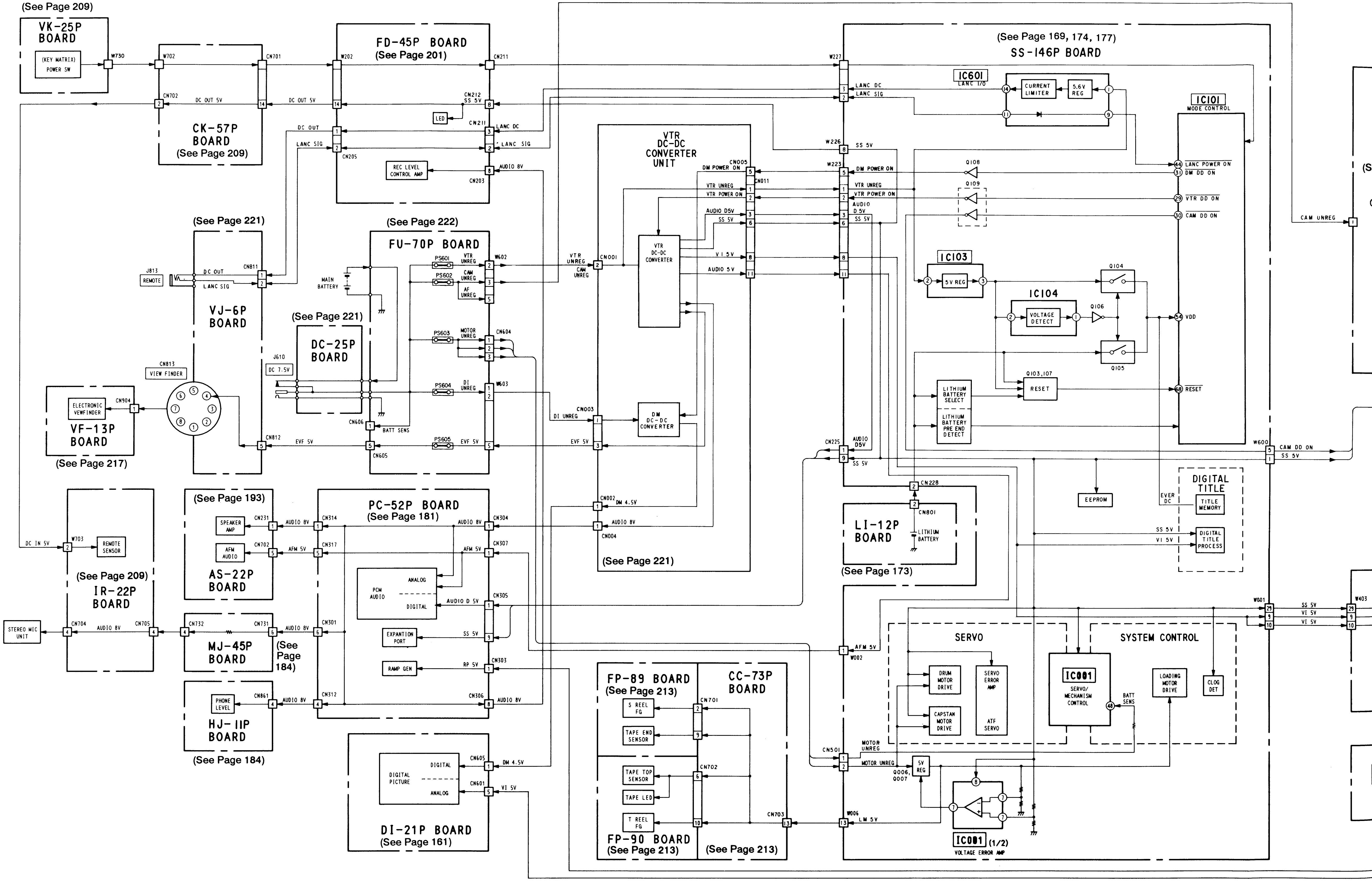

IC701
AFM PROCESS(L/L+R)
IC702
AFM PROCESS(R/L-R)
IC703 (1/2)
INVERTER
IC703 (1/2)
L+R MATRIX
IC704 (1/2)
IC705 (1/2)
L MATRIX
IC705 (1/2)
INVERTER
IC706 (1/2)
R MATRIX
IC706 (1/2)
L-R MATRIX
IC707 (1/2)
IC708
PLL
Q716
BUFFER
Y TRAP
Q729,730
LIMITER
FL701
1.5MHz BPF
Q717,718
PB RF AMP
FL702
1.7MHz BPF
Q719,720
PB RF AMP
Q713,714
MIX AMP
RV713
REC AFM
REC AFM RF (1.5MHz)
REC AFM RF (1.7MHz)
Q733
AMP
Q732
AMP
Q715
1.7MHz MUTE
1.7MHz CAR ON/OFF (CN702 ⑩)
RV714
1.7MHz LEVEL
Q706
DOC LEVEL SWITCH
Q709
DOC LEVEL SWITCH
LP/SP (Q707)
RF SWP (CN702①)
PG DUBLER
DROP OUT DETECTOR
PB AMP
LIMITER
PHASE COMP (FM DEMOD)
HOLD 1
HOLD 2
LPF
VCO (FM MODE)
V-I CONV
REC ON
EMPHASIS 2
WEIGHTING FILTER
DET
VCA
EMPHASIS 1
MOA
MUTE
5dB AMP
MUTE DET
AGC AMP
AGC DET
MIX
REG 4.2V
4.2V
REC/PB
PB/REC (CN702②)
L MUTE (Q711)
R MUTE (Q712)
INPUT SEL (CN703⑥)
IN1
IN2
IN3
RV701
1.5MHz CARRIER
RV702
1.5MHz DEVIATION
SP/LP SWITCH
Q702
RV703
1.7MHz CARRIER
RV704
1.7MHz DEVIATION
Q704
Q703
SP/LP (CN703②)
1/2 13
PHASE COMP
1/N
1/M
X'TAL OSC
X701
AMP
REC ON
AGC TIME CONSTANT
Q705
CAM/LINE SWITCH
Q708
CAM/LINE SWITCH
CAM/LINE (CN703④)
PB L+R/REC L
PB L+R/REC L+R
PB L+R/EEL
REC L+R
REC L
REC L-R
REC R
PB L-R/REC L-R
PB L-R/REC R
PB L+R
PB L-R
REC/PB (Q728)
PB/REC (CN702②)
RV706
L+R
RV707
L-R
RV710
L MATRIX
RV712
R MATRIX
PB MT/TH (Q710)
PB MT/TH (CN702⑨)
CN702
AFM L OUT
AFM R OUT
PCM AUDIO (PC-52P BOARD)
CN703
AFM L IN
AFM R IN
AFM MONO IN
Q721,723~727
1.7MHz CARRIER DETECT
Q701
2.5V REG
2.5V
AFM 5V
1.7MHz CAR ON/OFF
PB MT/TH
Q710
Q712
R MUTE
Q711
L MUTE
PB/REC
REC/PB
Q728
RF SWP
INPUT SEL
CAM/LINE
SP/LP
LP/SP
Q707
1.7MHz CAR ON/OFF
MONO/STEREO DET
MARKER MUTE
SERVO (SS-146P BOARD)

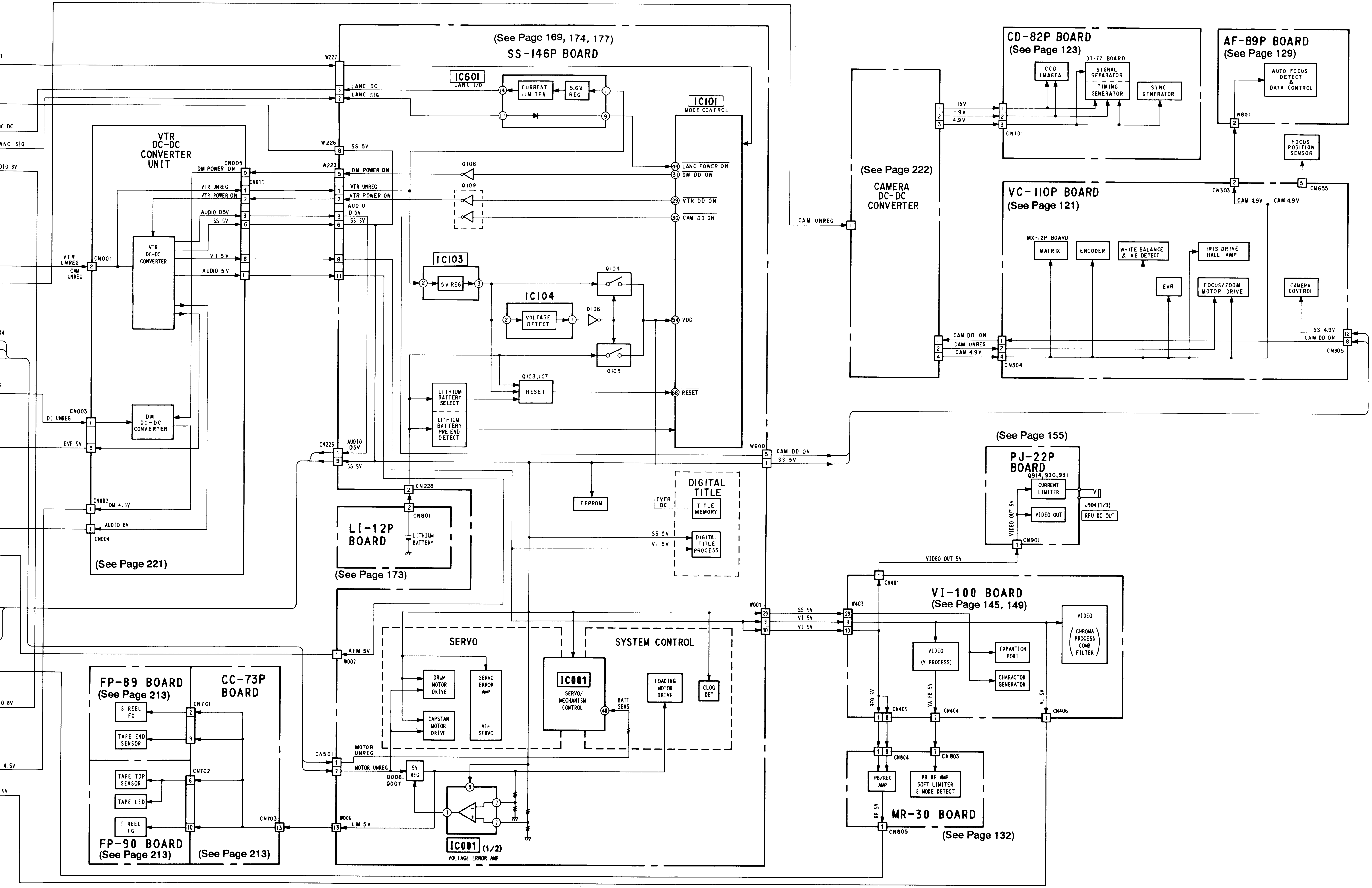
3-15. VIEW FINDER BLOCK DIAGRAM


TL-19P BOARD
(See Page 217)
D955
TALLY
W956
W950
D950
TALLY
TL-18P BOARD
(See Page 217)
W951
W902
TALLY
VF-13P BOARD
(See Page 217)
IC901 ⑪ VTR REC
3.2Vp-p
H
IC901 ⑨ VTR REC
H
1Vp-p
2.2Vp-p
IC901 ⑭ VTR REC
H
CP901
CONTRAST
Q904
VIDEO OUT
W901
G1
T901 FBT
H1
H2
HV
+5V
Q903
H.OUT
C905
H SIZE
D903
DUMPER
RV901
FOCUS
G3
G2
CP901
BRIGHT
L903
(HLC)
CN901
DH
DH
CN904
W904
TALLY
VF OUT
EVF 5V
CP 901
AFC
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
2Vp-p
V
IC901 ⑤
2Vp-p
V
IC901 ③
CP901
V SIZE
CN902
DV
DV
V FREQ
R925,926
C919


CP901
CONTRAST
Q904
VIDEO OUT
W901
G1
CRT
3.2Vp-p
11 VTR REC
2.2Vp-p
H
14 VTR REC
T901 FBT
H1
H2
HV
+5V
Q903
H.OUT
RV901
FOCUS
G3
C905
H SIZE
D903
DUMPER
G2
H
DRIVE
2Vp-p
V
IC901 5
CP901
BRIGHT
MIX
L903
(HLC)
CN901
DH1
L901 DY
H
V
DH2
V OUT
2Vp-p
V
IC901 3
CP901
V SIZE
CN902
DV1
DV2

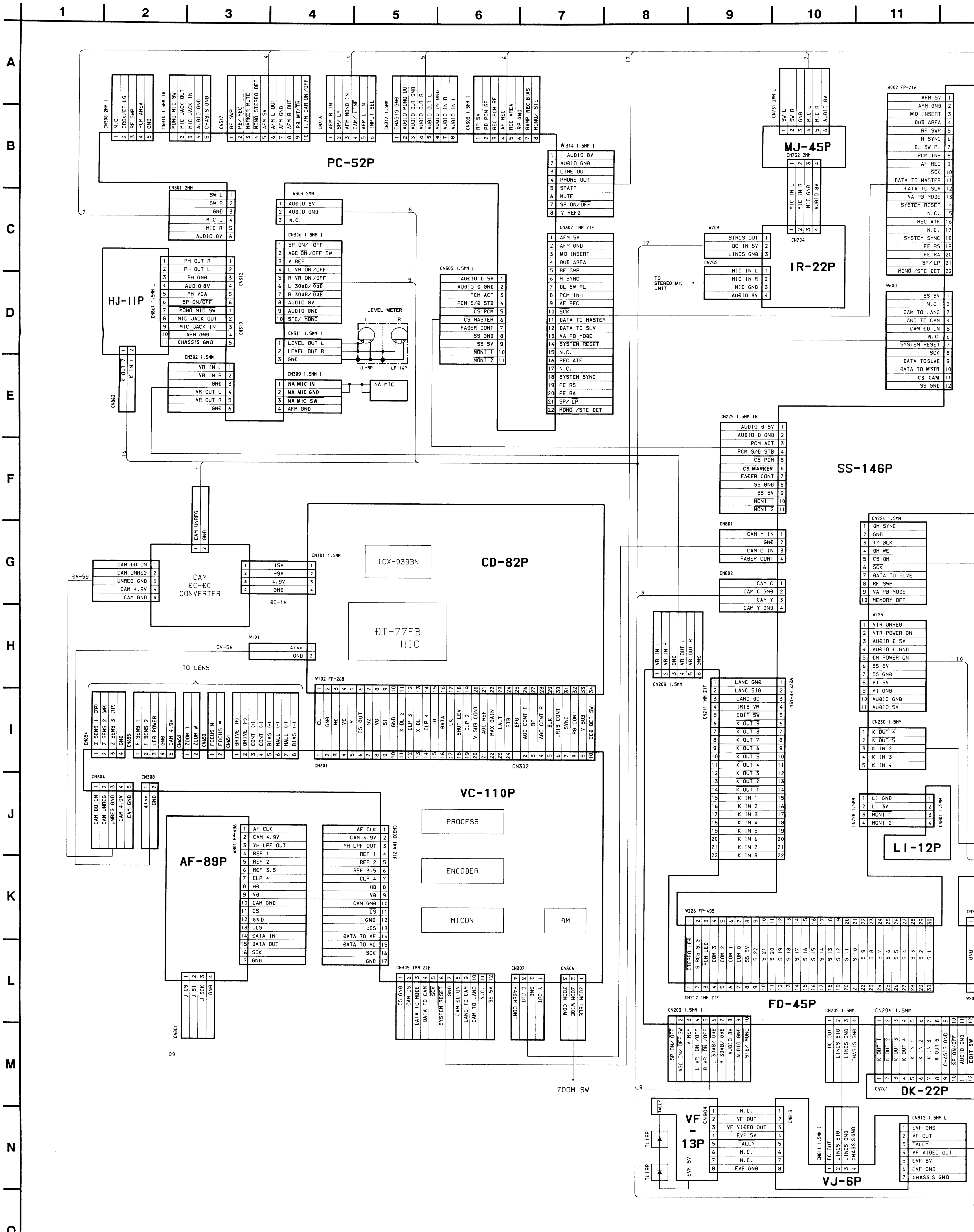
3-16. POWER BLOCK DIAGRAM


(See Page 209)
VK-25P BOARD
(KEY MATRIX) POWER SW
W730
W702
CK-57P BOARD
(See Page 209)
CN701
CN702
DC OUT 5V
FD-45P BOARD
(See Page 201)
W202
CN211
CN212 SS 5V
LED
CN211 LANC DC
LANC SIG
DC OUT
CN205
REC LEVEL CONTROL AMP
AUDIO 8V
CN203
(See Page 169, 174, 177)
SS-146P BOARD
W227
IC601 LANC I/O
CURRENT LIMITER
5.6V REG
LANC DC
LANC SIG
W226 SS 5V
W223
DM POWER ON
VTR UNREG
VTR POWER ON
AUDIO D 5V
SS 5V
IC101 MODE CONTROL
LANC POWER ON
DM DD ON
VTR DD ON
CAM DD ON
Q108
Q109
CAM UNREG
IC103
5V REG
Q104
IC104
VOLTAGE DETECT
Q106
VDD
Q105
Q103,107
RESET
LITHIUM BATTERY SELECT
LITHIUM BATTERY PRE END DETECT
VTR DC-DC CONVERTER UNIT
CN005
CN011
VTR DC-DC CONVERTER
CN001
VTR UNREG
CAM UNREG
V1 5V
AUDIO 5V
CN003
DI UNREG
DM DC-DC CONVERTER
EVF 5V
CN002 DM 4.5V
CN004
AUDIO 8V
(See Page 221)
(See Page 221)
J813 REMOTE
CN811
DC OUT
LANC SIG
VJ-6P BOARD
CN813 VIEW FINDER
CN812
EVF 5V
(See Page 222)
FU-70P BOARD
MAIN BATTERY
PS601
PS602
W602
VTR UNREG
CAM UNREG
AF UNREG
PS603
MOTOR UNREG
CN604
(See Page 221)
DC-25P BOARD
J610 DC 7.5V
CN606
BATT SENS
PS604
DI UNREG
W603
PS605
EVF 5V
CN605
ELECTRONIC VIEWFINDER
CN904
VF-13P BOARD
(See Page 217)
CN225
AUDIO D5V
SS 5V
W600
CAM DD ON
SS 5V
CN228
LI-12P BOARD
CN801
LITHIUM BATTERY
(See Page 173)
EEPROM
EVER DC
DIGITAL TITLE
TITLE MEMORY
DIGITAL TITLE PROCESS
SS 5V
V1 5V
(See Page 193)
SPEAKER AMP
CN231
AUDIO 8V
AFM AUDIO
CN702
AFM 5V
AS-22P BOARD
PC-52P BOARD
(See Page 181)
CN314
CN317
CN304
CN307
ANALOG
PCM AUDIO
DIGITAL
AUDIO D 5V
CN305
EXPANTION PORT
SS 5V
RAMP GEN
RP 5V
CN303
CN301
CN312
CN306
W703
REMOTE SENSOR
DC IN 5V
(See Page 209)
IR-22P BOARD
STEREO MIC UNIT
CN704
CN705
AUDIO 8V
CN732
CN731
MJ-45P BOARD
(See Page 184)
CN861
PHONE LEVEL
HJ-11P BOARD
(See Page 184)
DIGITAL PICTURE
DIGITAL
ANALOG
CN605
DM 4.5V
CN601
V1 5V
DI-21P BOARD
(See Page 161)
FP-89 BOARD
(See Page 213)
S REEL FG
TAPE END SENSOR
TAPE TOP SENSOR
TAPE LED
T REEL FG
FP-90 BOARD
(See Page 213)
CC-73P BOARD
(See Page 213)
CN701
CN702
CN703
W001
W002 AFM 5V
SERVO
DRUM MOTOR DRIVE
SERVO ERROR AMP
CAPSTAN MOTOR DRIVE
ATF SERVO
SYSTEM CONTROL
IC001 SERVO/ MECHANISM CONTROL
BATT SENS
LOADING MOTOR DRIVE
CLOG DET
CN501
MOTOR UNREG
Q006, Q007
5V REG
W006 LM 5V
IC001 (1/2) VOLTAGE ERROR AMP
W403
SS 5V
V1 5V


(See Page 169, 174, 177)
SS-146P BOARD
W227
LANC DC
LANC SIG
IC601
LANC I/O
CURRENT LIMITER
5.6V REG
IC101
MODE CONTROL
W226
SS 5V
W223
DM POWER ON
VTR UNREG
VTR POWER ON
AUDIO D 5V
SS 5V
Q108
Q109
LANC POWER ON
DM DD ON
VTR DD ON
CAM DD ON
IC103
5 V REG
IC104
VOLTAGE DETECT
Q104
Q106
Q105
VDD
Q103,107
RESET
LITHIUM BATTERY SELECT
LITHIUM BATTERY PRE END DETECT
VTR DC-DC CONVERTER UNIT
CN005
CN011
AUDIO D5V
V1 5V
AUDIO 5V
VTR UNREG
CAM UNREG
CN001
VTR DC-DC CONVERTER
CN003
DI UNREG
DM DC-DC CONVERTER
EVF 5V
CN002
DM 4.5V
AUDIO 8V
CN004
(See Page 221)
CN225
AUDIO D5V
CN228
CN801
LI-12P BOARD
LITHIUM BATTERY
(See Page 173)
EEPROM
EVER DC
DIGITAL TITLE
TITLE MEMORY
VI 5V
DIGITAL TITLE PROCESS
W600
CAM DD ON
W001
AFM 5V
W002
SERVO
DRUM MOTOR DRIVE
CAPSTAN MOTOR DRIVE
SERVO ERROR AMP
ATF SERVO
SYSTEM CONTROL
IC001
SERVO/ MECHANISM CONTROL
BATT SENS
LOADING MOTOR DRIVE
CLOG DET
CN501
MOTOR UNREG
5V REG
Q006, Q007
W006
LM 5V
IC001 (1/2)
VOLTAGE ERROR AMP
FP-89 BOARD
(See Page 213)
S REEL FG
TAPE END SENSOR
CC-73P BOARD
CN701
CN702
CN703
TAPE TOP SENSOR
TAPE LED
T REEL FG
FP-90 BOARD
(See Page 213)
(See Page 213)
CAM UNREG
(See Page 222)
CAMERA DC-DC CONVERTER
15V
-9V
4.9V
CD-82P BOARD
(See Page 123)
CCD IMAGEA
DT-77 BOARD
SIGNAL SEPARATOR
TIMING GENERATOR
SYNC GENERATOR
CN101
AF-89P BOARD
(See Page 129)
AUTO FOCUS DETECT & DATA CONTROL
W801
FOCUS POSITION SENSOR
CN303
CN655
CAM 4.9V
VC-110P BOARD
(See Page 121)
MX-12P BOARD
MATRIX
ENCODER
WHITE BALANCE & AE DETECT
EVR
IRIS DRIVE HALL AMP
FOCUS/ZOOM MOTOR DRIVE
CAMERA CONTROL
SS 4.9V
CN305
CN304
CAM DD ON
CAM UNREG
CAM 4.9V
(See Page 155)
PJ-22P BOARD
Q914, 930, 931
CURRENT LIMITER
VIDEO OUT
VIDEO OUT 5V
J904 (1/3)
RFU DC OUT
CN901
CN401
VI-100 BOARD
(See Page 145, 149)
W403
VIDEO (CHROMA PROCESS COMB FILTER)
VIDEO (Y PROCESS)
EXPANTION PORT
CHARACTOR GENERATOR
REG 5V
VA PB 5V
VI 5V
CN405
CN404
CN406
CN804
CN803
PB/REC AMP
PB RF AMP SOFT LIMITER E MODE DETECT
RP 5V
MR-30 BOARD
CN805
(See Page 132)

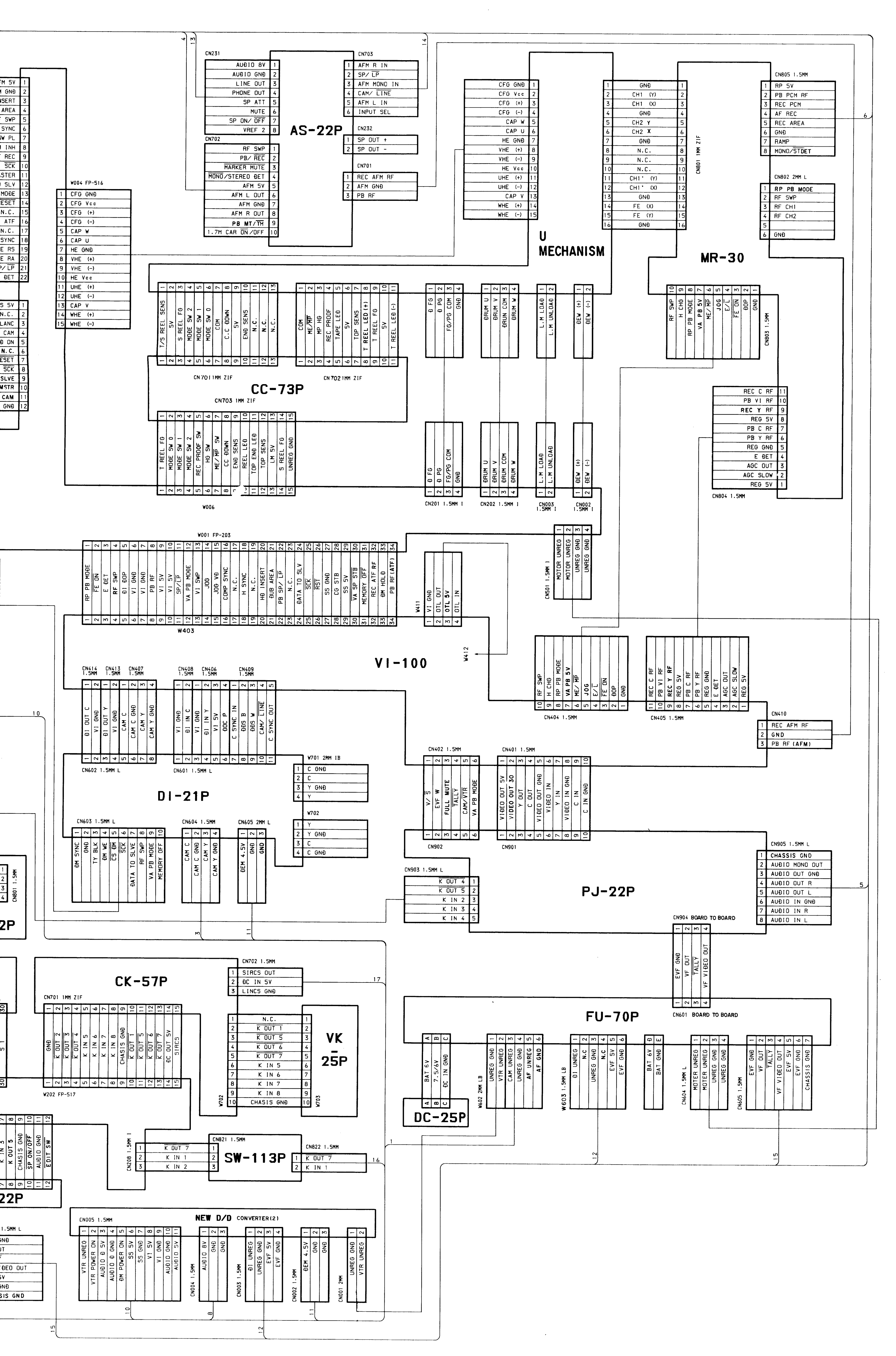
SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



PC-52P
MJ-45P
IR-22P
HJ-11P
SS-146P
CD-82P
ICX-039BN
DT-77FB HIC
CAM DC-DC CONVERTER
DC-16
DV-59
CV-56
W101
TO LENS
VC-110P
PROCESS
ENCODER
MICON
DM
AF-89P
FD-45P
DK-22P
VF-13P
VJ-6P
LI-12P
LEVEL METER
NA MIC
LL-SP
LR-14P
TO STEREO MIC UNIT
ZOOM SW
CN308 2MM I
CN310 1.5MM IB
CN317
CN316
CN313 1.5MM
CN303 1.5MM I
CN301 2MM
W304 2MM L
CN306 1.5MM I
CN311 1.5MM I
CN309 1.5MM I
CN312
CN310
CN302 1.5MM
CN861 1.5MM L
CN862
W314 1.5MM I
CN307 1MM ZIF
CN305 1.5MM L
CN731 2MM L
CN732 2MM
CN704
W703
CN705
W002 FP-216
W600
CN225 1.5MM IB
CN801
CN802
CN224 1.5MM
W223
CN230 1.5MM
CN228 1.5MM
CN209 1.5MM
CN211 1MM ZIF
W227 FP-494
W226 FP-495
CN212 1MM ZIF
CN203 1.5MM I
CN205 1.5MM
CN206 1.5MM
CN761
CN812 1.5MM L
CN811 1.5MM I
CN813
CN904
TL18P
TL19P
CN101 1.5MM
W102 FP-268
CN301
CN302
CN304
CN308
CN354
CN355
CN352
CN353
CN351
W801 FP-496
CN505 1MM ZIF
CN305 1MM ZIF
CN307
CN306
CN801

4-2. PRINTED WIRING BO


12
13
14
15
16
17
18
19
20
AS-22P
CN231
CN702
CN703
CN232
CN701
U MECHANISM
MR-30
CN801 1MM ZIF
CN805 1.5MM
CN802 2MM L
CN803 1.5MM
CN804 1.5MM
CC-73P
CN701 1MM ZIF
CN702 1MM ZIF
CN703 1MM ZIF
W004 FP-516
W006
CN201 1.5MM I
CN202 1.5MM I
CN003 1.5MM I
CN002 1.5MM I
W001 FP-203
W403
CN501 1.5MM I
W411
W412
VI-100
CN404 1.5MM
CN405 1.5MM
CN410
CN414 1.5MM
CN413 1.5MM
CN407 1.5MM
CN408 1.5MM
CN406 1.5MM
CN409 1.5MM
CN602 1.5MM L
CN601 1.5MM L
W701 2MM IB
W702
DI-21P
CN603 1.5MM L
CN604 1.5MM
CN605 2MM L
CN402 1.5MM
CN401 1.5MM
CN902
CN901
CN903 1.5MM L
CN905 1.5MM L
PJ-22P
CN904 BOARD TO BOARD
CN801 1.5MM
2P
CK-57P
CN702 1.5MM
CN701 1MM ZIF
W202 FP-517
VK-25P
W702
W703
FU-70P
CN601 BOARD TO BOARD
DC-25P
W602 2MM LB
W603 1.5MM LB
CN604 1.5MM L
CN605 1.5MM
CN208 1.5MM I
CN821 1.5MM
SW-113P
CN822 1.5MM
22P
NEW D/D CONVERTER(2)
CN005 1.5MM
CN004 1.5MM
CN003 1.5MM
CN002 1.5MM
CN001 2MM

THIS NOTE IS COMMON FO
(In addition to this , the neces

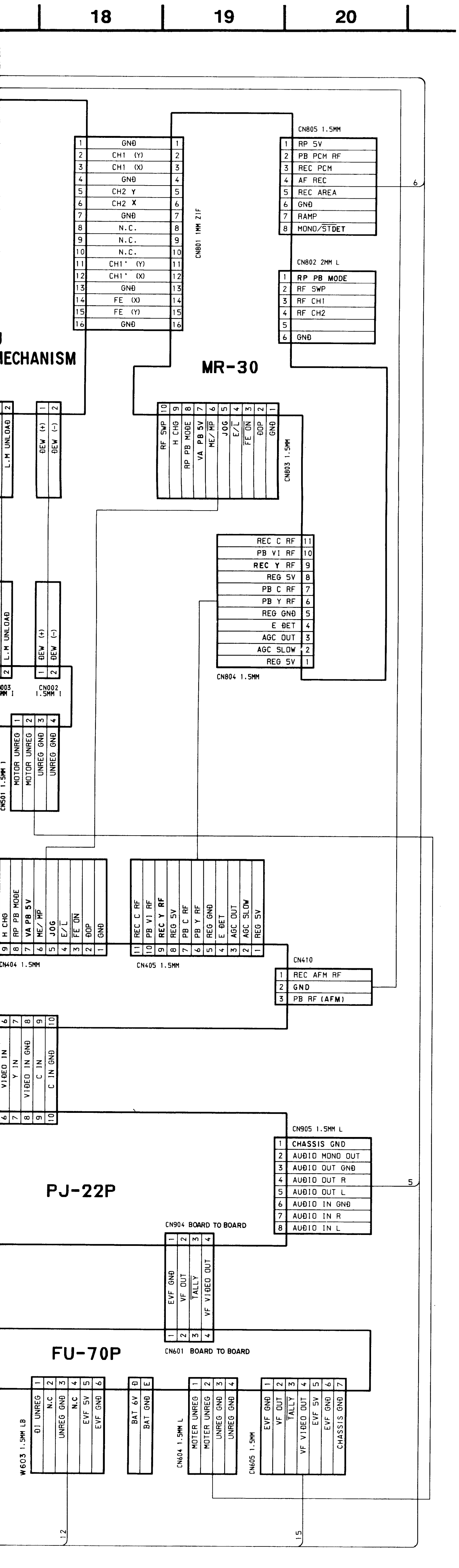
- **For printed wiring boards.**
- ○— : indicated a lead wire mou
- —— : indicated a lead wire mou
- ● : Through hole.
- ■ : Parts mounted on the co
- ▨ : Pattern from the side whi
- ■ : Pattern of the rear side.*
- Circled numbers refer to wavefor

Caution:	
Pattern face side: (Conductor Side)	Parts on the the pattern f
Parts face side: (Component side)	Parts on the parts face a

- **For schematic diagrams.**
- Caution when replacing chip part New parts must be attached after Be careful not to heat the minu because it is damaged by the hea
- All resistors are in ohms, chi otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless ot 50V or less are not indicated tantalums.
- All variable and adjustable resisto unless otherwise noted.
- ▭ : nonflammable resistor.
- ⏛ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair.*
- ━ : B+ Line.*
- ⇛ : IN/OUT direction of (+, –)
- Circled numbers refer to wavefor

Note: The components identified line with mark ⚠ are critical Replace only with part num

When indicating parts by reference number, please include the board name.


18
19
20
IECHANISM
MR-30
PJ-22P
FU-70P
CN805 1.5MM
RP 5V
PB PCM RF
REC PCM
AF REC
REC AREA
GND
RAMP
MONO/STDET
CN801 1MM ZIF
GND
CH1 (Y)
CH1 (X)
CH2 Y
CH2 X
N.C.
CH1' (Y)
CH1' (X)
FE (X)
FE (Y)
CN802 2MM L
RP PB MODE
RF SWP
RF CH1
RF CH2
L.M UNLOAD
DEW (+)
DEW (-)
CN803 1.5MM
RF SWP
H CHG
RP PB MODE
VA PB 5V
ME/HP
JOG
E/L
FE ON
BOP
CN804 1.5MM
REC C RF
PB VI RF
REC Y RF
REG 5V
PB C RF
PB Y RF
REG GND
E DET
AGC OUT
AGC SLOW
CN002 1.5MM
CN501 1.5MM
MOTOR UNREG
UNREG GND
CN404 1.5MM
CN405 1.5MM
CN410
REC AFM RF
PB RF (AFM)
VIDEO IN
Y IN
VIDEO IN GND
C IN
C IN GND
CN905 1.5MM L
CHASSIS GND
AUDIO MONO OUT
AUDIO OUT GND
AUDIO OUT R
AUDIO OUT L
AUDIO IN GND
AUDIO IN R
AUDIO IN L
CN904 BOARD TO BOARD
EVF GND
VF OUT
TALLY
VF VIDEO OUT
CN601 BOARD TO BOARD
W603 1.5MM LB
DI UNREG
N.C
UNREG GND
EVF 5V
BAT 6V
BAT GND
CN604 1.5MM L
MOTER UNREG
CN605 1.5MM
EVF GND
CHASSIS GND
6
5
12
15

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ● : Through hole.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- ■ : Pattern of the rear side.*
- Circled numbers refer to waveforms.*

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μ μF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ⏛ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- —— : B+ Line.*
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

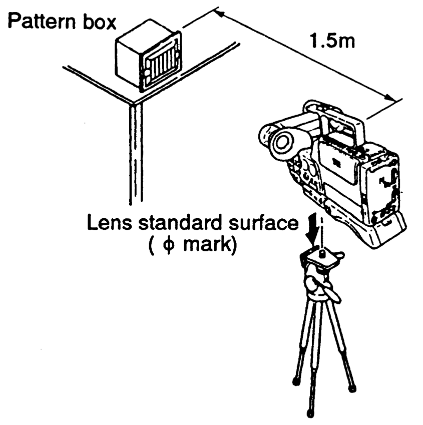
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

(CAMERA, AUTO FOCUS block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
1.5m
Lens standard surface
(ϕ mark)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

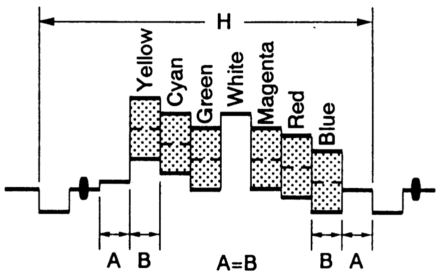

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output waveform of J904 on PJ-22P board.)

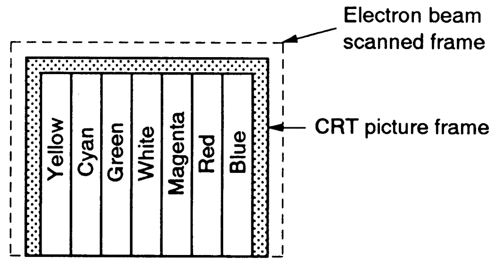

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, MODE CONTROL, AUDIO, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

*: indicated by the color red.

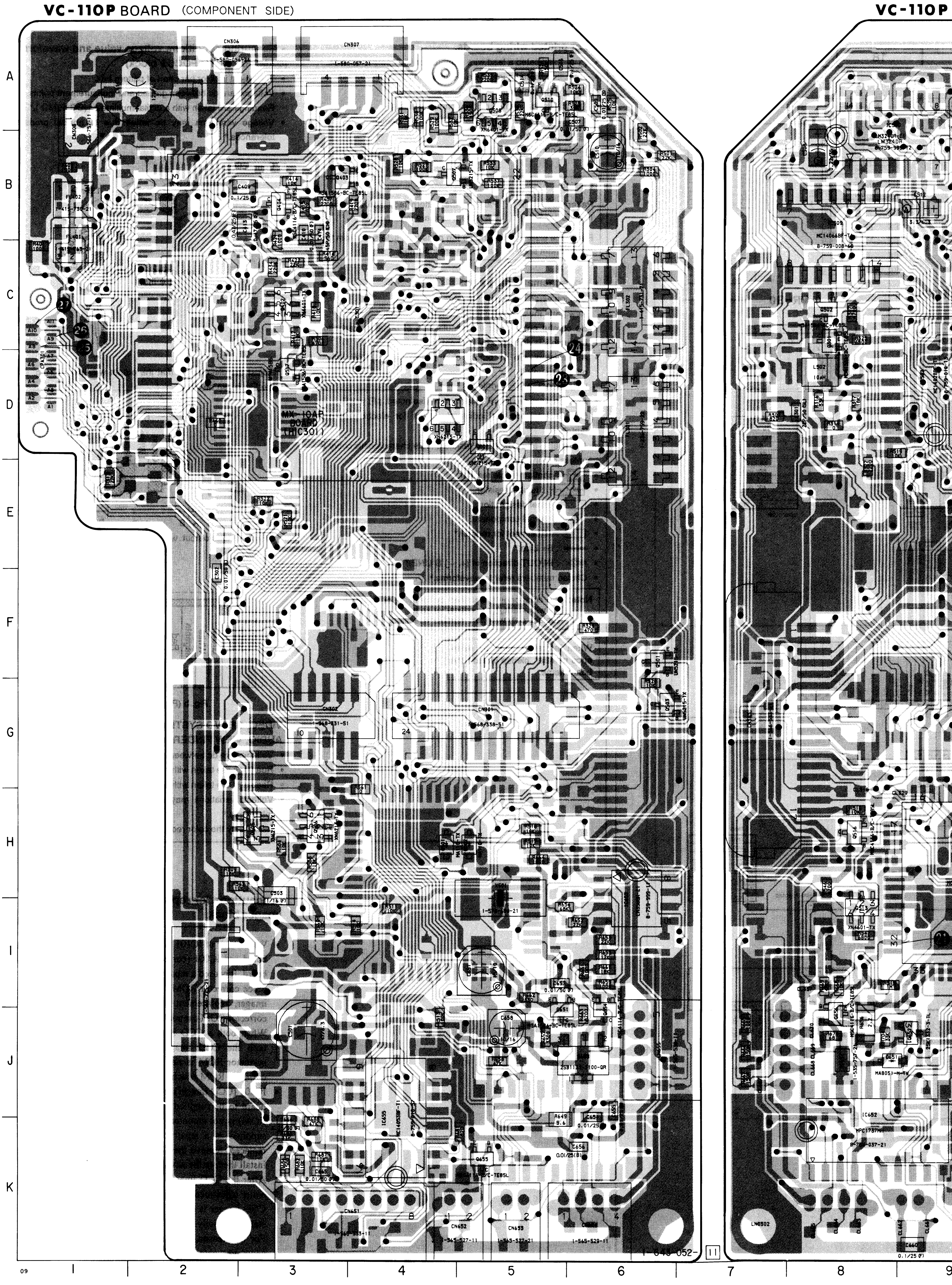
Precautions for replacement of CCD imager block.

- With a pair of IC101 (CCD imager) on the CD-82P complete board and IC001 (corrector ROM) on the DT-77FB complete board, it is used a repair part of the CCD imager block.
  Since corrector ROM IC is manufactured to match the CCD imager, replacement of a single unit of the CCD imager corrector ROM cannot be allowed.
- When both a CCD imager and the corrector ROM, replace both the CCD imager and the corrector ROM, when a corrector ROM is not mounted on the service set, install a corrector ROM which is supplied anew.
- IC101 (CCD imager) is not mounted on the CD-82P complete board to be supplied as a repair part, and IC001 (corrector ROM) is not mounted on the DT-77FB complete board to be supplied as a repair part. When the respective boards are replaced, remove the respective ICs from the old boards and install them to the new once respectively.
- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity.
  For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light receiving section and for strong light not to get into there.

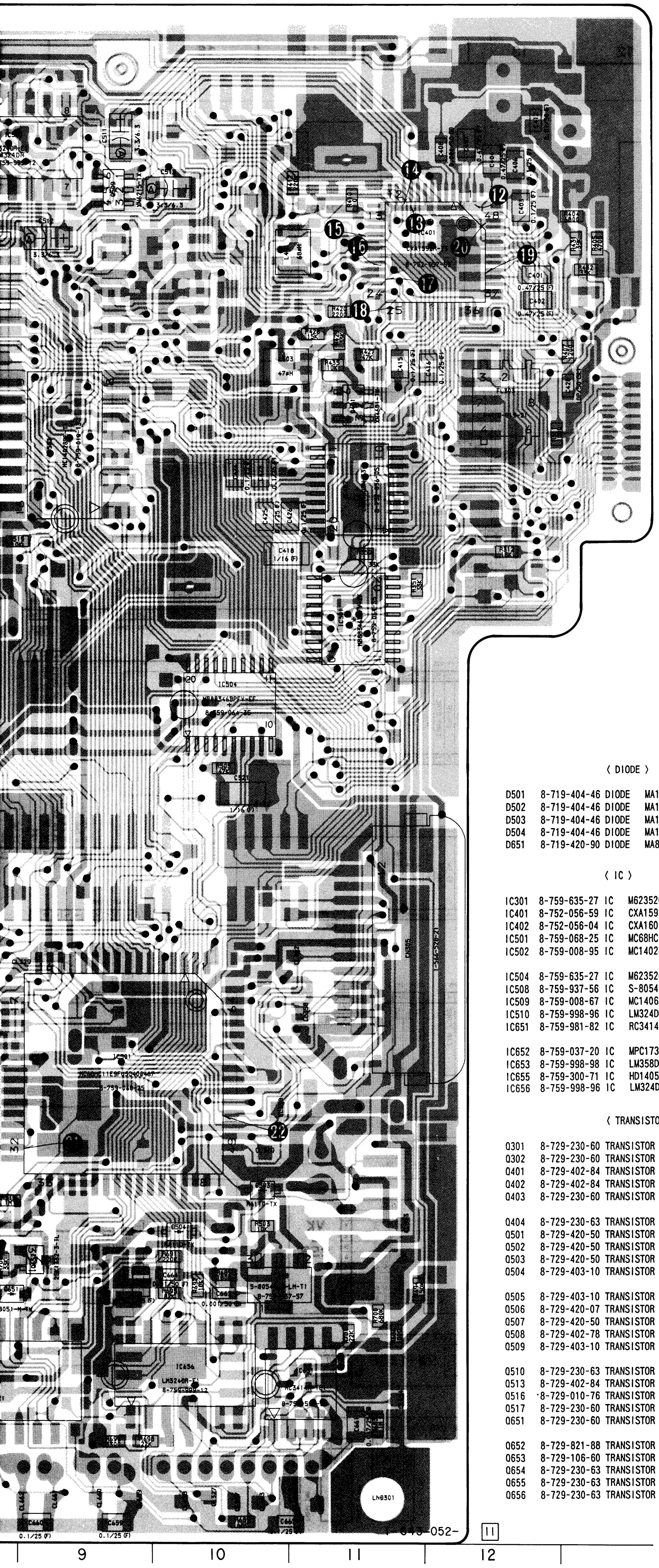
FRAME FRAME

VC-110P (CAMERA PROCESS, ZOOM/FOCUS), CD-82P (CCD IMAGER) PRINTED WIRING BOARDS

- Refer to page 125 for Waveforms.


VC-110P BOARD (COMPONENT SIDE)
VC-110P
A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7
8
9
CN306
CN307
CN301
CN302
CN651
CN652
CN653
MX-10AR BOARD (IC301)
IC655
IC652
09

VC-110P BOARD (CONDUCTOR SIDE)


IC401
IC504
IC501
IC654
LN6301
9
10
11
12

(DIODE)

D501	8-719-404-46	DIODE	MA110
D502	8-719-404-46	DIODE	MA110
D503	8-719-404-46	DIODE	MA110
D504	8-719-404-46	DIODE	MA110
D651	8-719-420-90	DIODE	MA8051-M

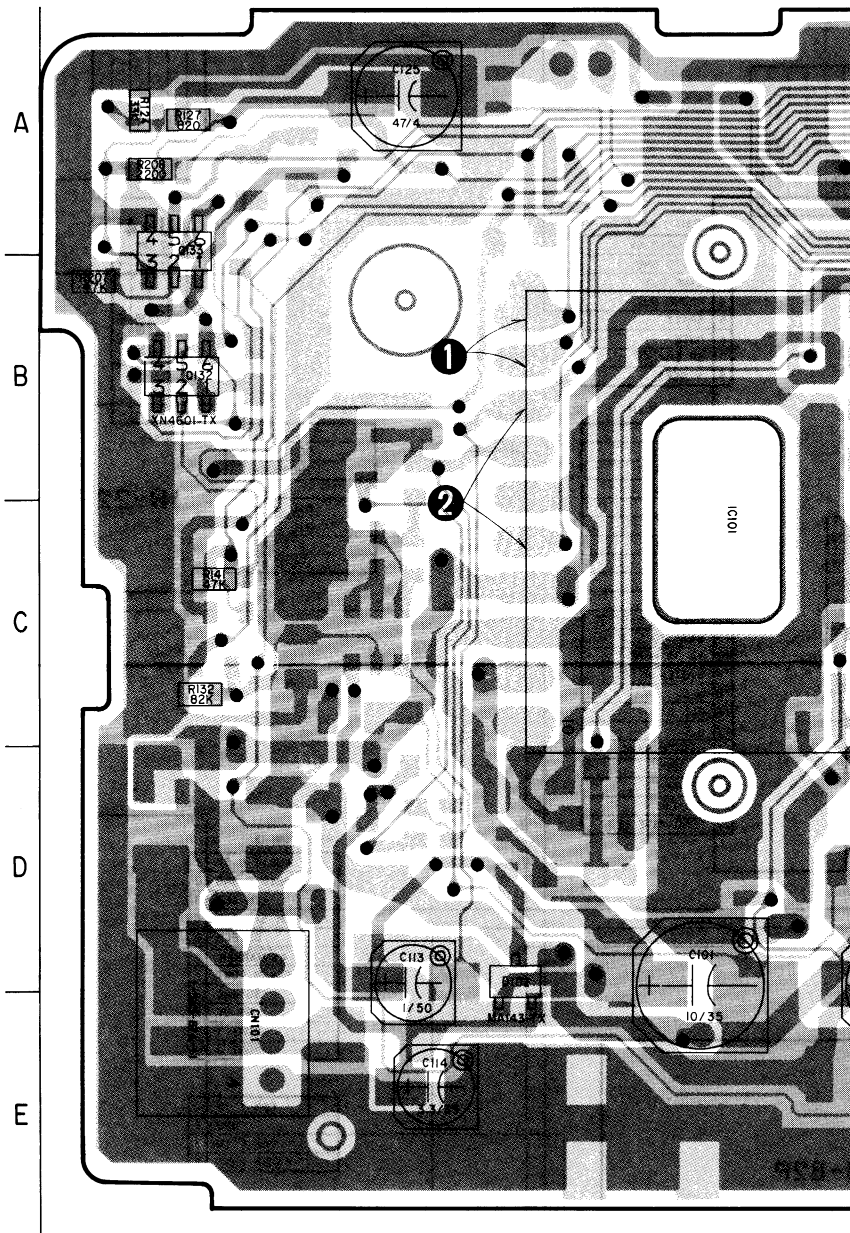
(IC)

IC301	8-759-635-27	IC	M62352GP
IC401	8-752-056-59	IC	CXA1592R
IC402	8-752-056-04	IC	CXA1609N
IC501	8-759-068-25	IC	MC68HC11E9FUSC400467
IC502	8-759-008-95	IC	MC14028BF
IC504	8-759-635-27	IC	M62352GP
IC508	8-759-937-56	IC	S-8054ALB-LM-S
IC509	8-759-008-67	IC	MC14066BF
IC510	8-759-998-96	IC	LM324D
IC651	8-759-981-82	IC	RC3414M
IC652	8-759-037-20	IC	MPC1737M
IC653	8-759-998-98	IC	LM358D
IC655	8-759-300-71	IC	HD14053BFP
IC656	8-759-998-96	IC	LM324D

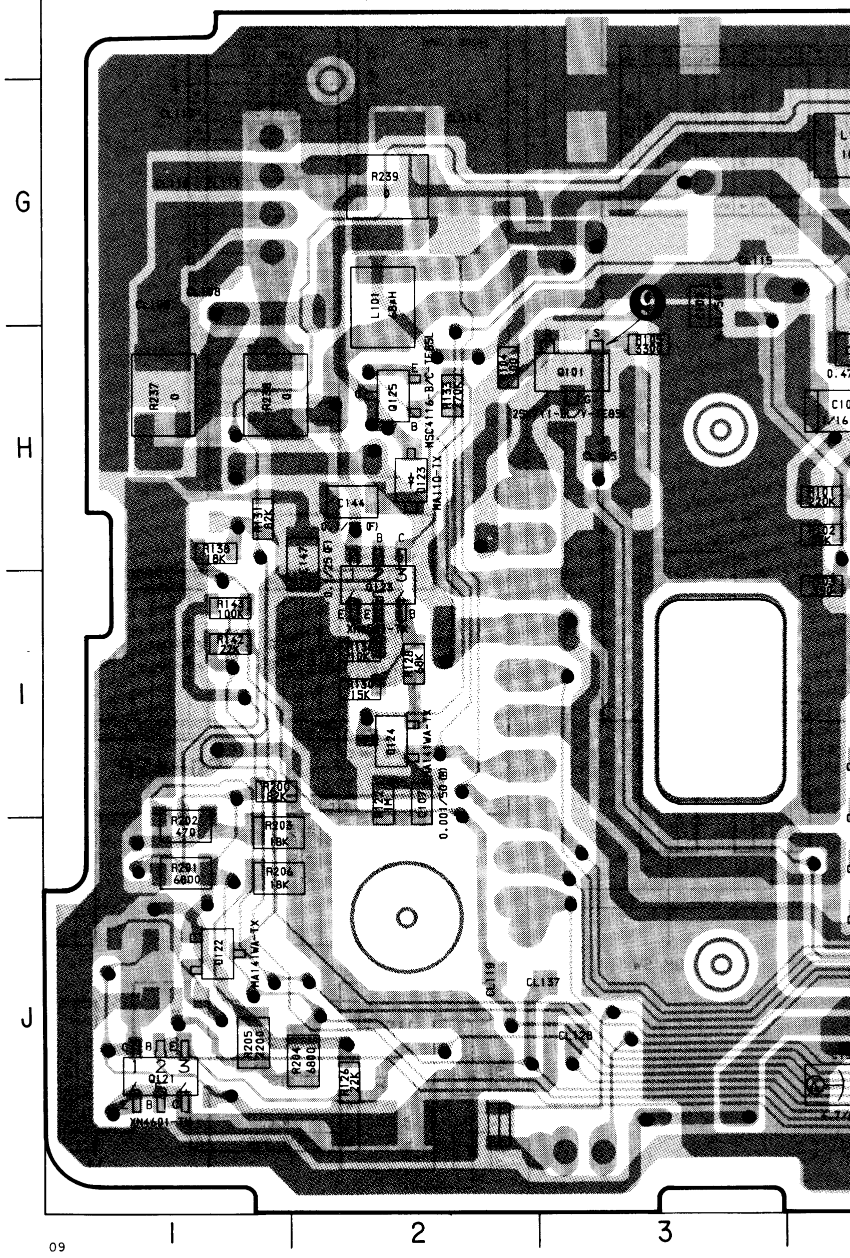
(TRANSISTOR)

Q301	8-729-230-60	TRANSISTOR	2SA1586-YG
Q302	8-729-230-60	TRANSISTOR	2SA1586-YG
Q401	8-729-402-84	TRANSISTOR	XN4601
Q402	8-729-402-84	TRANSISTOR	XN4601
Q403	8-729-230-60	TRANSISTOR	2SA1586-YG
Q404	8-729-230-63	TRANSISTOR	2SC4116-YG
Q501	8-729-420-50	TRANSISTOR	UN5215
Q502	8-729-420-50	TRANSISTOR	UN5215
Q503	8-729-420-50	TRANSISTOR	UN5215
Q504	8-729-403-10	TRANSISTOR	XN6215
Q505	8-729-403-10	TRANSISTOR	XN6215
Q506	8-729-420-07	TRANSISTOR	XN6213
Q507	8-729-420-50	TRANSISTOR	UN5215
Q508	8-729-402-78	TRANSISTOR	XN6401
Q509	8-729-403-10	TRANSISTOR	XN6215
Q510	8-729-230-63	TRANSISTOR	2SC4116-YG
Q513	8-729-402-84	TRANSISTOR	XN4601
Q516	8-729-010-76	TRANSISTOR	2SC4116-YG
Q517	8-729-230-60	TRANSISTOR	2SA1586-YG
Q651	8-729-230-60	TRANSISTOR	2SA1586-YG
Q652	8-729-821-88	TRANSISTOR	2SK1332-3
Q653	8-729-106-60	TRANSISTOR	2SB1115A-YQ
Q654	8-729-230-63	TRANSISTOR	2SC4116-YG
Q655	8-729-230-63	TRANSISTOR	2SC4116-YG
Q656	8-729-230-63	TRANSISTOR	2SC4116-YG

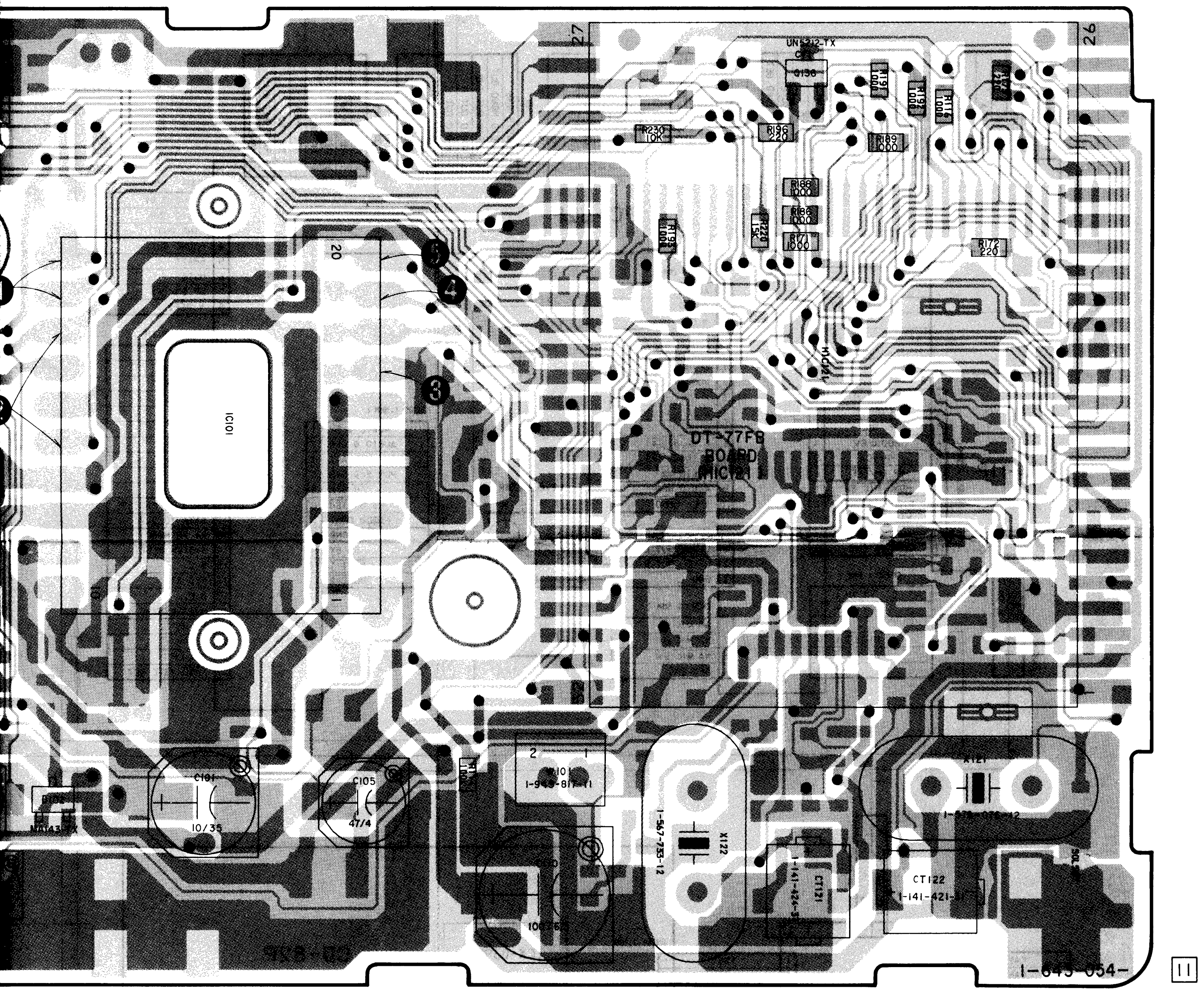
CD-82P BOARD (COMPONENT SIDE)


A
B
C
D
E
IC101
C125
47/4
C113
1/50
C101
10/35
C114
CN101
R141
R132
82K
XN4601-TX

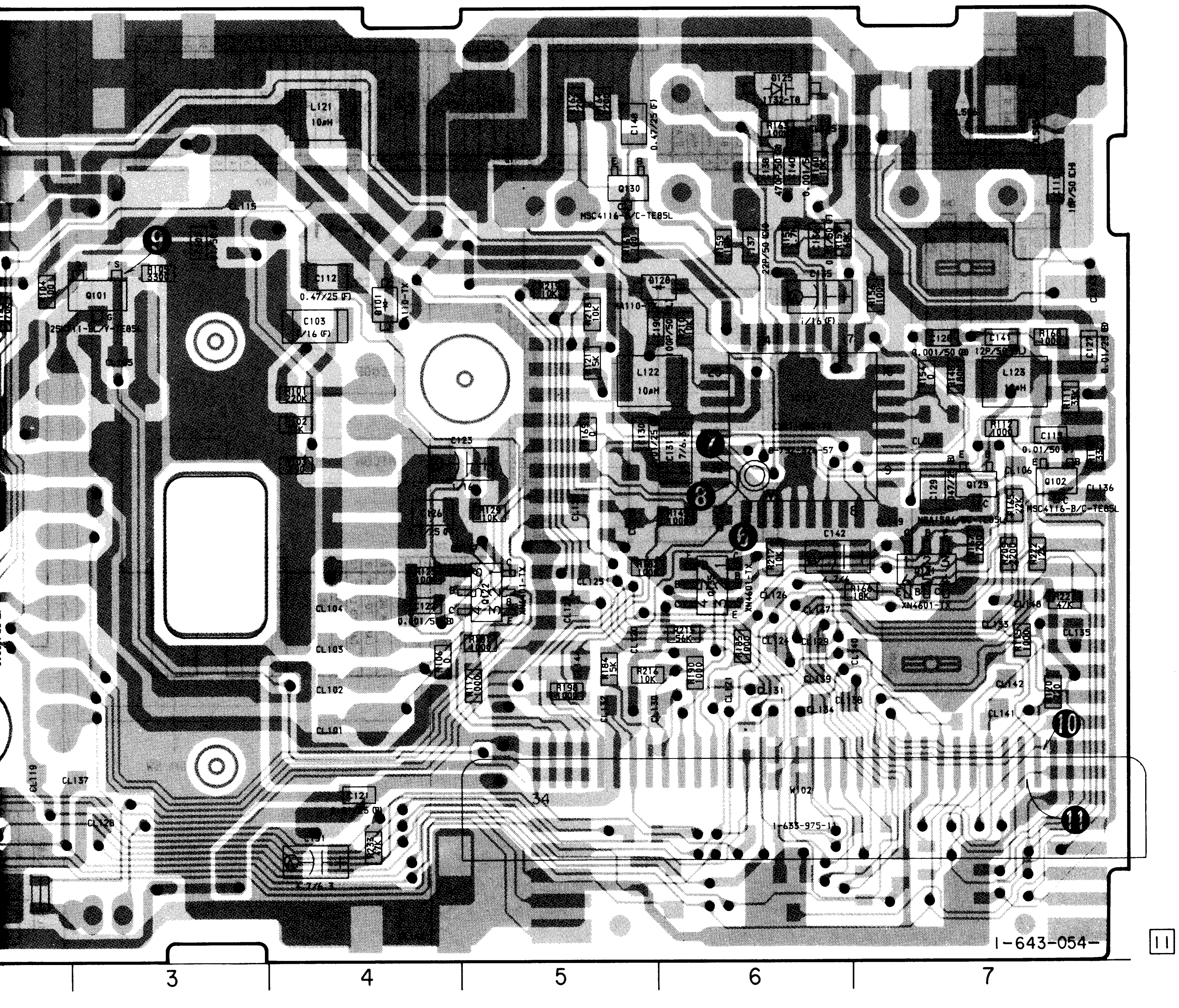
CD-82P BOARD (CONDUCTOR SIDE)


F
G
H
I
J
R239
R237
L101
Q101
Q125
Q123
Q124
Q122
Q121
XN4601
CL137
CL126
L118
09
1
2
3

ONENT SIDE)


27
26
20
IC101
DT-77FB
BOARD
(MIC)
C101
10/35
C105
47/4
X122
X121
CT122
1-643-054-
11

UCTOR SIDE)


L121
10mH
Q101
C103
L122
10mH
Q130
Q102
W102
1-633-975-11
34
1-643-054-
11
3
4
5
6
7

(DIODE)

D101	8-719-404-46	DIODE	MA110
D102	8-719-800-76	DIODE	1SS226
D122	8-719-820-05	DIODE	1SS181
D123	8-719-404-46	DIODE	MA110
D124	8-719-820-05	DIODE	1SS181
D125	8-719-949-46	DIODE	1T32
D128	8-719-404-46	DIODE	MA110

(IC)

IC121	8-752-326-08	IC	CXD1159Q

(TRANSISTOR)

Q101	8-729-012-35	TRANSISTOR	2SK711-BL/V-TE85L
Q102	8-729-230-63	TRANSISTOR	2SC4116-YG
Q121	8-729-402-84	TRANSISTOR	XN4601
Q122	8-729-402-78	TRANSISTOR	XN6401
Q123	8-729-402-19	TRANSISTOR	XN6501
Q125	8-729-230-63	TRANSISTOR	2SC4116-YG
Q129	8-729-230-60	TRANSISTOR	2SA1586-YG
Q130	8-729-230-63	TRANSISTOR	2SC4116-YG
Q131	8-729-402-84	TRANSISTOR	XN4601
Q132	8-729-402-84	TRANSISTOR	XN4601
Q133	8-729-402-84	TRANSISTOR	XN4601
Q135	8-729-402-84	TRANSISTOR	XN4601
Q136	8-729-402-45	TRANSISTOR	UN5212

VC-110P (CAMERA PROCESS, ZOOM/FOCUS), CD-82P (CCD IMAGER) SCHEMATIC DIAGRAMS

- Refer to page 125 for Waveforms.

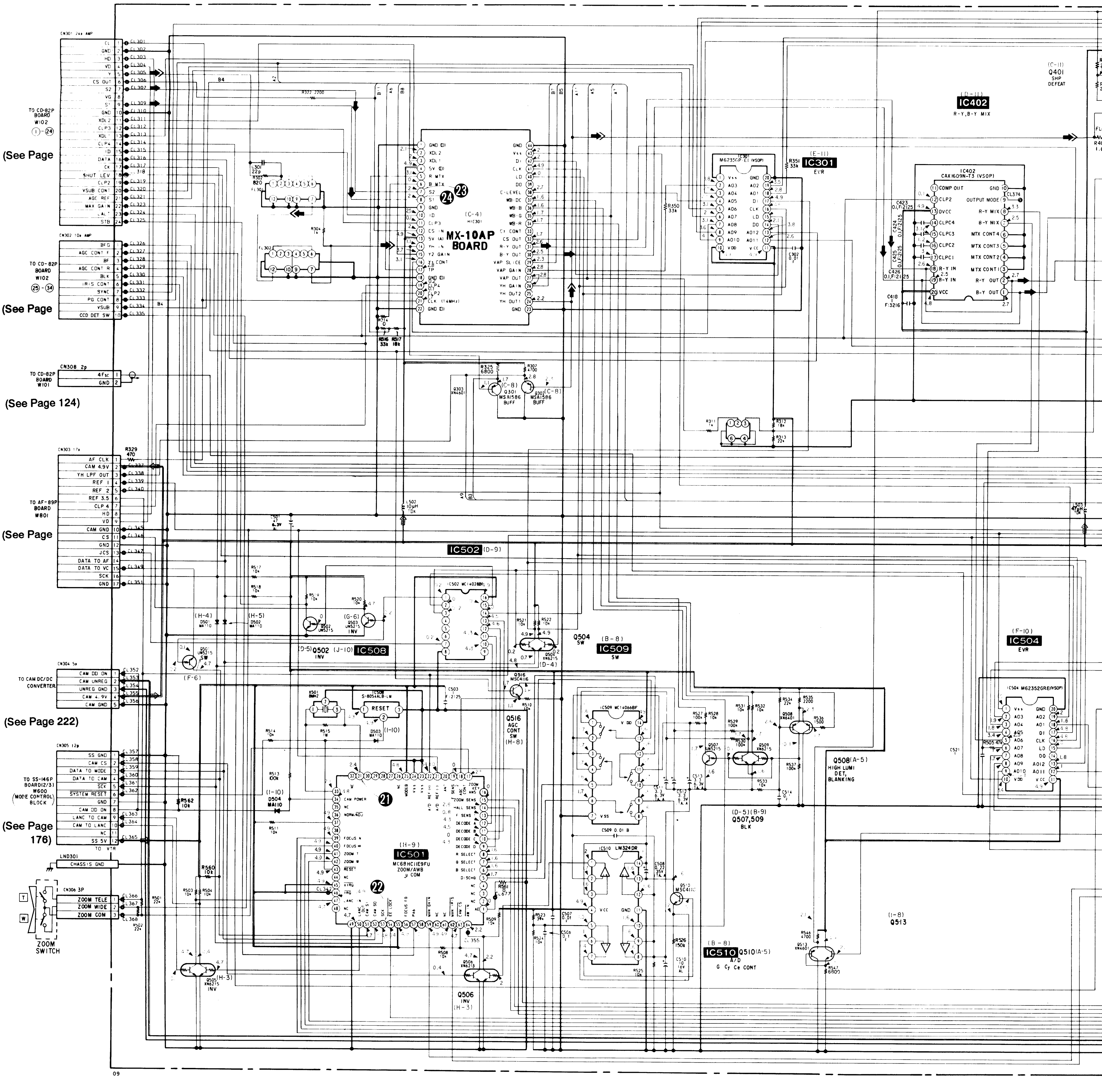
1 2 3 4 5 6 7 8 9 10 11

A B C D E F G H I J K L M N

— Ref. No. VC-110P, CD-82P BOARDS: 1000 series —

- All resistors are in ohms, 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .

- MX-10AP Board is replaced as a block.



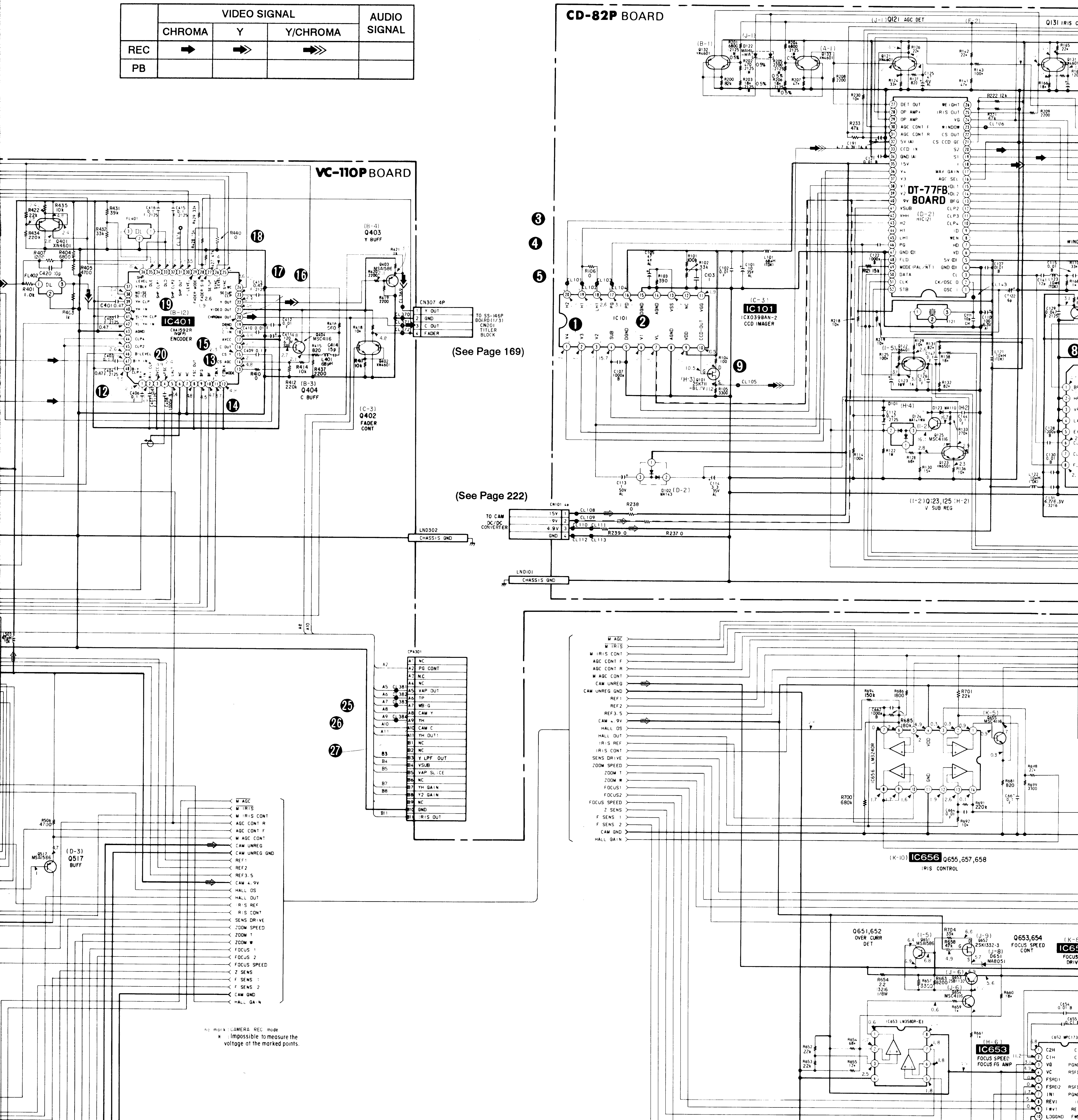
TO CD-82P BOARD W102 ①-㉔
(See Page
TO CD-82P BOARD W102 ㉕-㉞
(See Page
TO CD-82P BOARD W101
(See Page 124)
TO AF-89P BOARD W801
(See Page
TO CAM DC/DC CONVERTER
(See Page 222)
TO SS-146P BOARD(2/3) W600 (MODE CONTROL) BLOCK
(See Page 176)
ZOOM SWITCH
T
W
CN301 24P
CN302 10P
CN308 2P
CN303 17P
CN304 5P
CN305 12P
CN306 3P
LND301
CHASSIS GND
ZOOM TELE
ZOOM WIDE
ZOOM COM
MX-10AP BOARD
㉓
㉔
㉑
㉒
IC301
EVR
M62352GP-E1 (VSOP)
IC402
R-Y,B-Y MIX
CAX1609N-T3 (VSOP)
Q401
SHP DEFEAT
Q301 MSA1586 BUFF
Q307 MSA1586 BUFF
Q303
IC502
IC508
S-8054ALB-LW
RESET
IC509
SW
MC14066BF
IC501
MC68HC11E9FU
ZOOM/AWB μ COM
IC510
LM324DR
A/D G Cy Ce CONT
Q510
IC504
EVR
M62352GREI(VSOP)
Q504 SW
Q516 AGC CONT SW
Q502 INV
Q503 INV
Q505 INV
Q506 INV
Q507,509 BLK
Q508 HIGH LUMI DET, BLANKING
Q513
D501
D502
D503
D504 MA110
X501 8MHz
R560 10k
R562 10k
R329 470
L507 10μH

12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23

- DT-77FB Board is replaced as a block.

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	
PB				

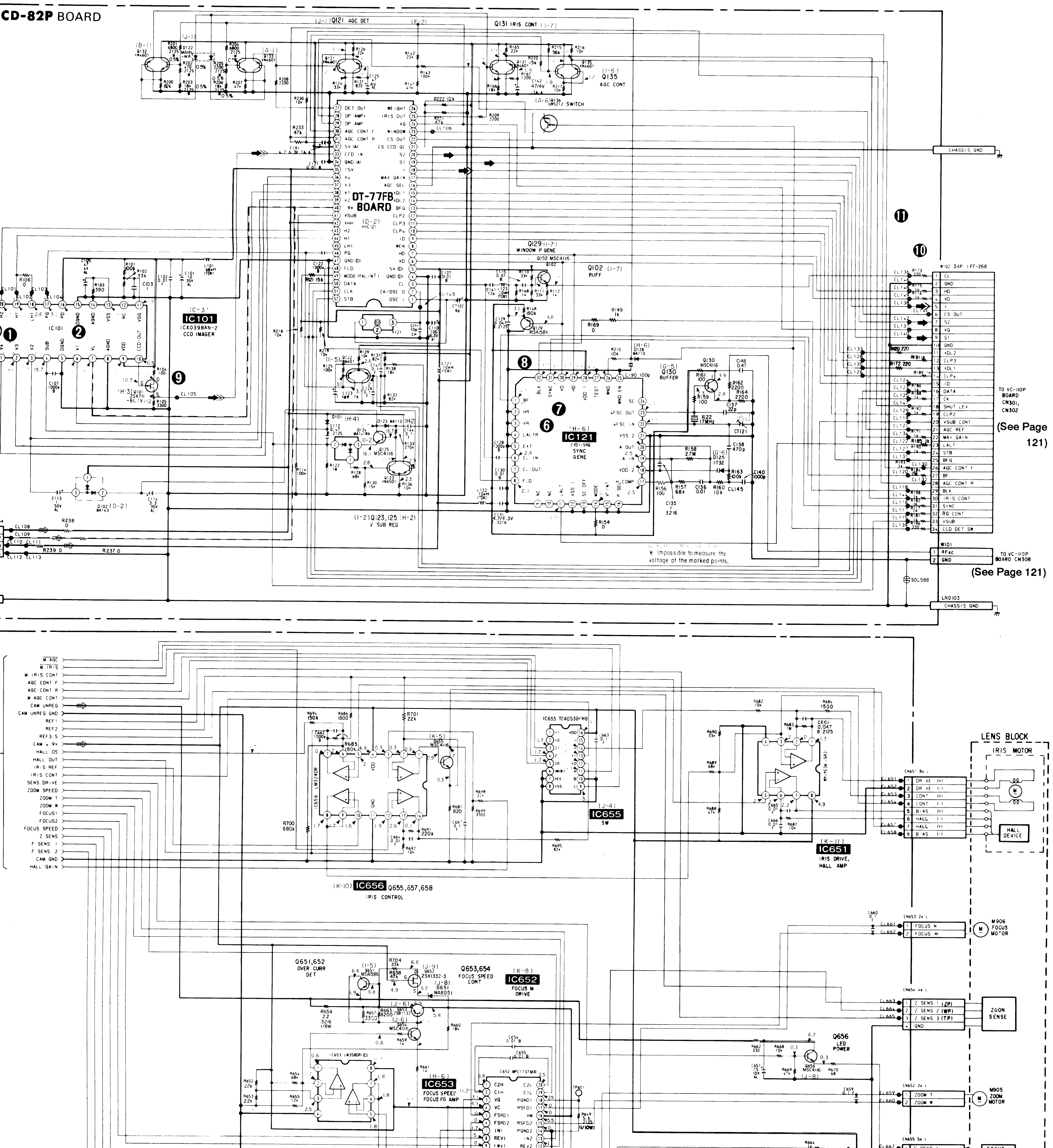


CD-82P BOARD
VC-110P BOARD
DT-77FB BOARD
(D-2) HIC121
(B-12) IC401 CXA1592R (NQFP) ENCODER
(C-3) IC101 ICX039BAN-2 CCD IMAGER
(B-4) Q403 Y BUFF
(B-3) Q404 C BUFF
(C-3) Q402 FADER CONT
Q401 XN4601
(J-1) Q121 AGC DET
Q131 IRIS
(H-3) Q101 2SK711 -BL/V12
(I-5) Q122 MA4601
(I-2) Q123,125 (H-2) V SUB REG
Q102 (D-2) MA143
CN307 4P
1 Y OUT
2 GND
3 C OUT
4 FADER
TO SS-146P BOARD (1/3) CN201 TITLER BLOCK
(See Page 169)
(See Page 222)
CN101 4P
15V
9V
4.9V
GND
TO CAM DC/DC CONVERTER
LND302 CHASSIS GND
LND101 CHASSIS GND
CP4301
A1 NC
A2 PG CONT
A3 NC
A4 NC
A5 VAP OUT
A6 TP
A7 WB G
A8 CAM Y
A9 YH
A10 CAM C
A11 YH OUT1
B1 NC
B2 NC
B3 Y LPF OUT
B4 VSUB
B5 VAP SLICE
B6 NC
B7 YH GAIN
B8 Y2 GAIN
B9 NC
B10 GND
B11 IRIS OUT
M AGC
M IRIS
M IRIS CONT
AGC CONT F
AGC CONT R
M AGC CONT
CAM UNREG
CAM UNREG GND
REF1
REF2
REF3.5
CAM 4.9V
HALL OS
HALL OUT
IRIS REF
IRIS CONT
SENS DRIVE
ZOOM SPEED
ZOOM T
ZOOM W
FOCUS1
FOCUS2
FOCUS SPEED
Z SENS
F SENS 1
F SENS 2
CAM GND
HALL GAIN
(D-3) Q517 MSA1586 BUFF
(K-10) IC656 Q655,657,658 IRIS CONTROL
Q651,652 OVER CURR DET
Q653,654 FOCUS SPEED CONT
(H-6) IC653 FOCUS SPEED FOCUS FG AMP
IC656 LM324DR
IC653 LM358DR-E1
IC652 MPC1731
❸
❹
❺
❶
❷
❾
⓬
⓭
⓮
⓯
⓰
⓱
⓲
⓳
⓴
㉕
㉖
㉗

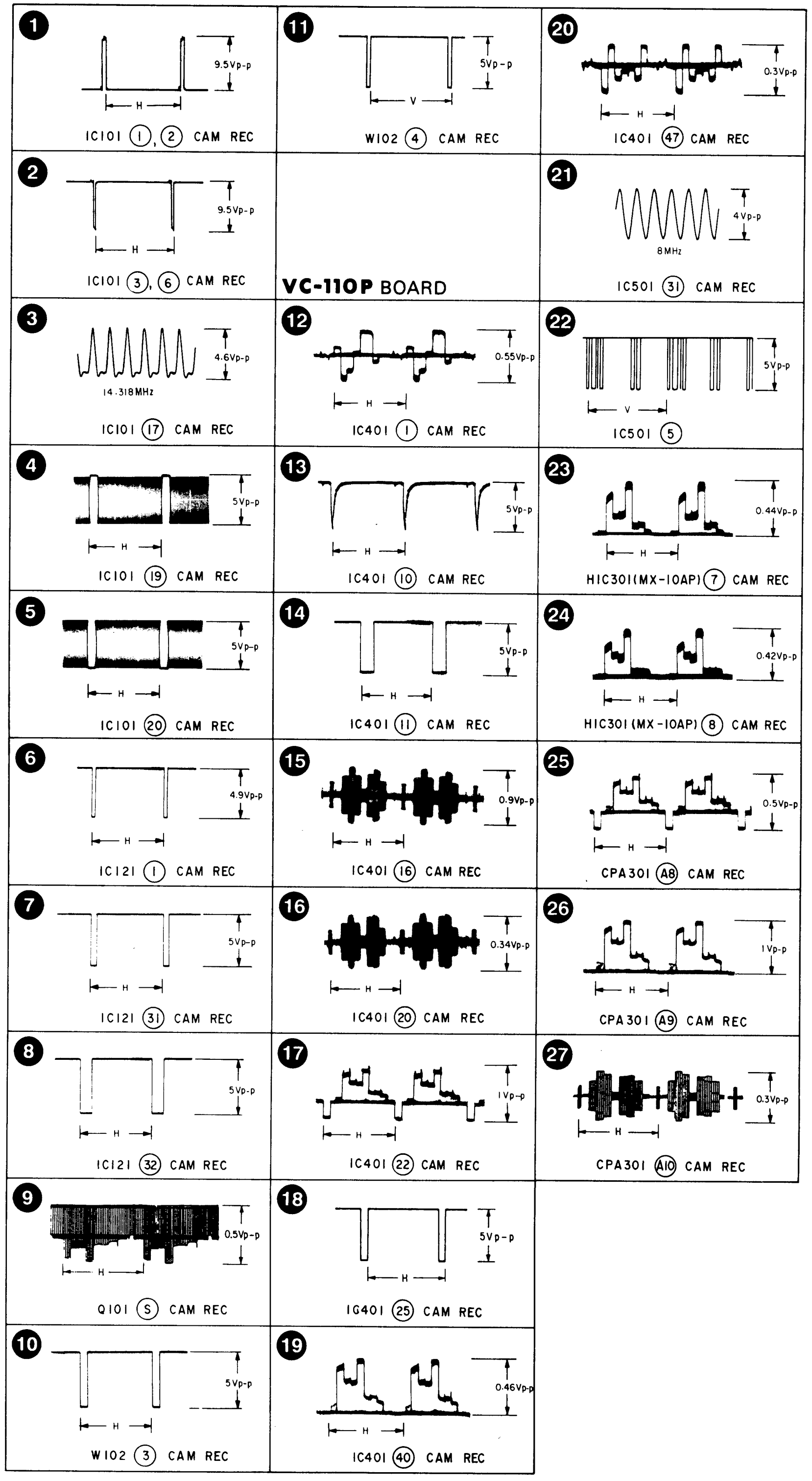
no mark : CAMERA REC mode
× : Impossible to measure the voltage at the marked points.

18	19	20	21	22	23	24	25	26	27	28

DT-77FB Board is replaced as a block.


CD-82P BOARD
DT-77FB BOARD
(C-3) IC101 ICX039BAN-2 CCD IMAGER
Q121 AGC DET
Q131 IRIS CONT
Q135 AGC CONT
Q136 UN5212 SWITCH
Q129 WINDOW P GENE
Q102 BUFF
Q130 MSC4116 BUFFER
(H-6) IC121 CXD1159Q SYNC GENE
Q123,125 V SUB REG
CHASSIS GND
W102 34P FF-268
1 CL
2 GND
3 HD
4 VD
5 F
6 CS OUT
7 S2
8 VG
9 S1
10 GND
11 XDL2
12 CLP3
13 XDL1
14 CLP4
15 ID
16 DATA
17 CK
18 SHUT LEV
19 CLP2
20 VSUB CONT
21 AGC REF
22 MAX GAIN
23 LALT
24 STB
25 BFG
26 AGC CONT F
27 BF
28 AGC CONT R
29 BLK
30 IRIS CONT
31 SYNC
32 RG CONT
33 VSUB
34 CCD DET SW
TO VC-110P BOARD CN301, CN302
(See Page 121)
W101
1 4Fsc
2 GND
TO VC-110P BOARD CN308
(See Page 121)
※ Impossible to measure the voltage at the marked points.
M AGC
M IRIS
M IRIS CONT
AGC CONT F
AGC CONT R
M AGC CONT
CAM UNREG
CAM UNREG GND
REF1
REF2
REF3.5
CAM 4.9V
HALL OS
HALL OUT
IRIS REF
IRIS CONT
SENS DRIVE
ZOOM SPEED
ZOOM T
ZOOM W
FOCUS1
FOCUS2
FOCUS SPEED
Z SENS
F SENS 1
F SENS 2
CAM GND
HALL GAIN
(K-10) IC656 Q655,657,658 IRIS CONTROL
IC655 TC4053BFHB
(J-4) IC655 SW
(K-11) IC651 IRIS DRIVE, HALL AMP
LENS BLOCK
IRIS MOTOR
HALL DEVICE
1 DRIVE (+)
2 DRIVE (-)
3 CONT (+)
4 CONT (-)
5 BIAS (+)
6 HALL (-)
7 HALL (+)
8 BIAS (-)
M906 FOCUS MOTOR
1 FOCUS N
2 FOCUS ∞
Q651,652 OVER CURR DET
Q653,654 FOCUS SPEED CONT
(K-8) IC652 FOCUS M DRIVE
(H-6) IC653 FOCUS SPEED FOCUS FG AMP
IC653 LM358DR-E1
IC652 μPC1737MR
Q656 LED POWER
1 Z SENS 1 (ZP)
2 Z SENS 2 (WP)
3 Z SENS 3 (TP)
4 GND
ZOOM SENSE
1 ZOOM T
2 ZOOM W
M905 ZOOM MOTOR
1 F SENS 1
2 F SENS 2
3 LED POWER
4 GND
5 CAM 4.9V
FOCUS SENS

CD-82P BOARD



〈 TRANSISTOR 〉

Q801	8-729-230-63	TRANSISTOR	2SC41
Q802	8-729-230-63	TRANSISTOR	2SC41
Q806	8-729-230-63	TRANSISTOR	2SC41
Q807	8-729-230-63	TRANSISTOR	2SC41
Q808	8-729-230-63	TRANSISTOR	2SC41
Q809	8-729-402-45	TRANSISTOR	UN521

〈 DIODE 〉

D801	8-719-404-46	DIODE	MA110

〈 IC 〉

IC801	8-752-334-68	IC	CXD1205R
IC802	8-752-057-60	IC	CXA1516M-T3
IC803	8-752-334-49	IC	CXD1172AM
IC804	8-759-998-96	IC	LM324D
IC805	8-759-998-96	IC	LM324D

ISTOR)

TOR 2SC4116-YG
TOR 2SC4116-YG
TOR 2SC4116-YG
TOR 2SC4116-YG
TOR 2SC4116-YG

TOR UN5212

E)

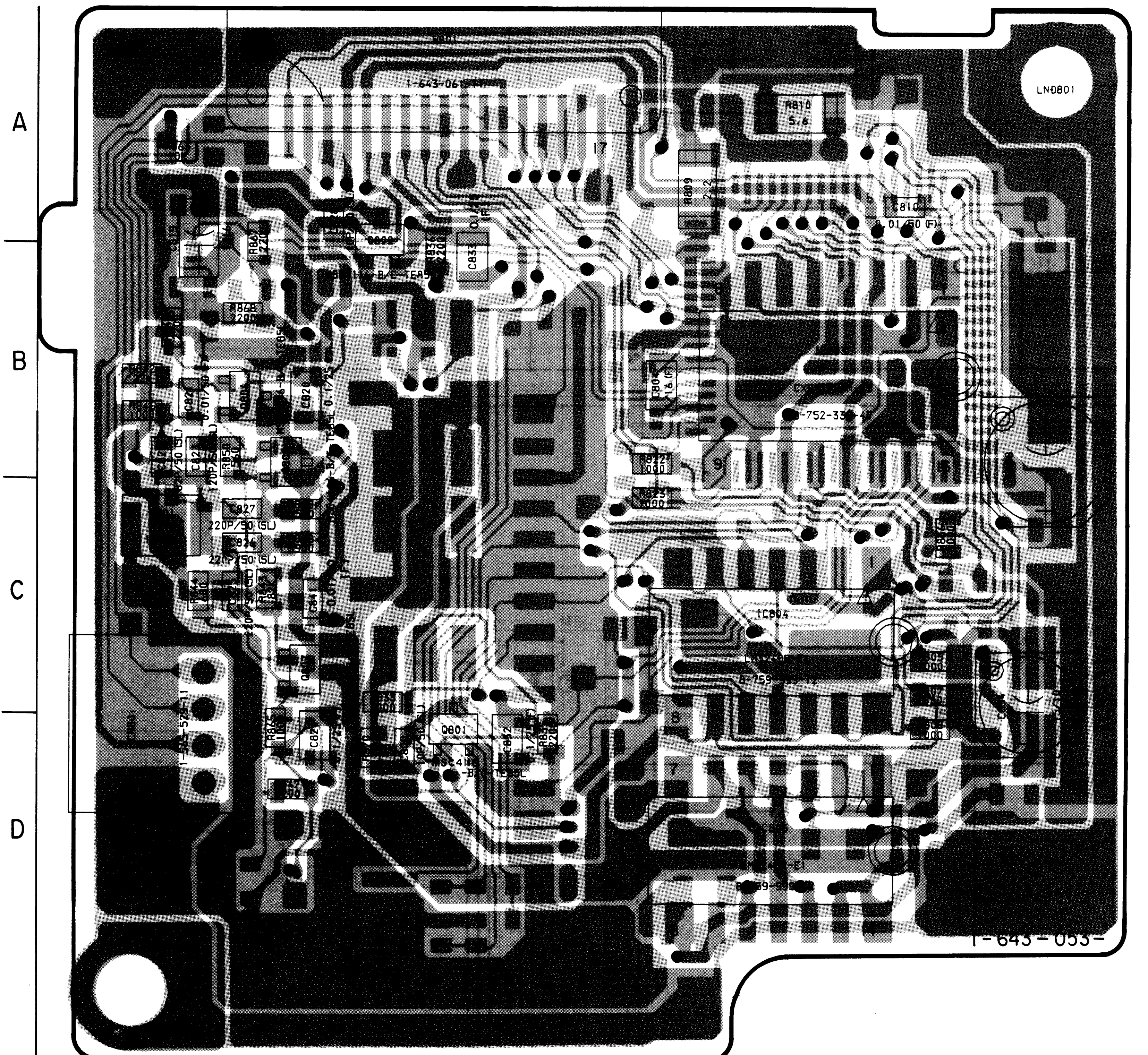
MA110

D1205R
A1516M-T3
D1172AM
324D
324D

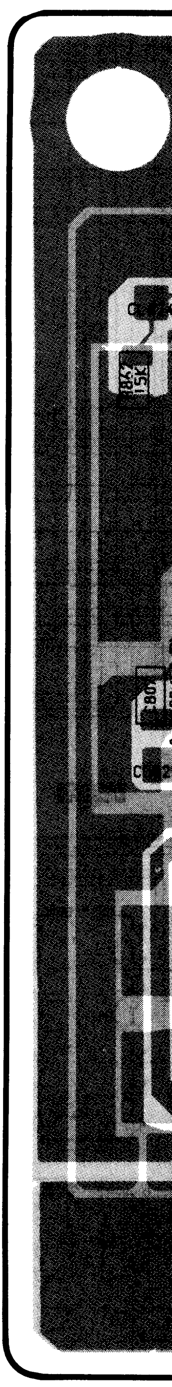
AF-89P (AUTO FOCUS) PRINTED WIRING BOARD

— Ref. No. AF-89P BOARD: 1000 series —

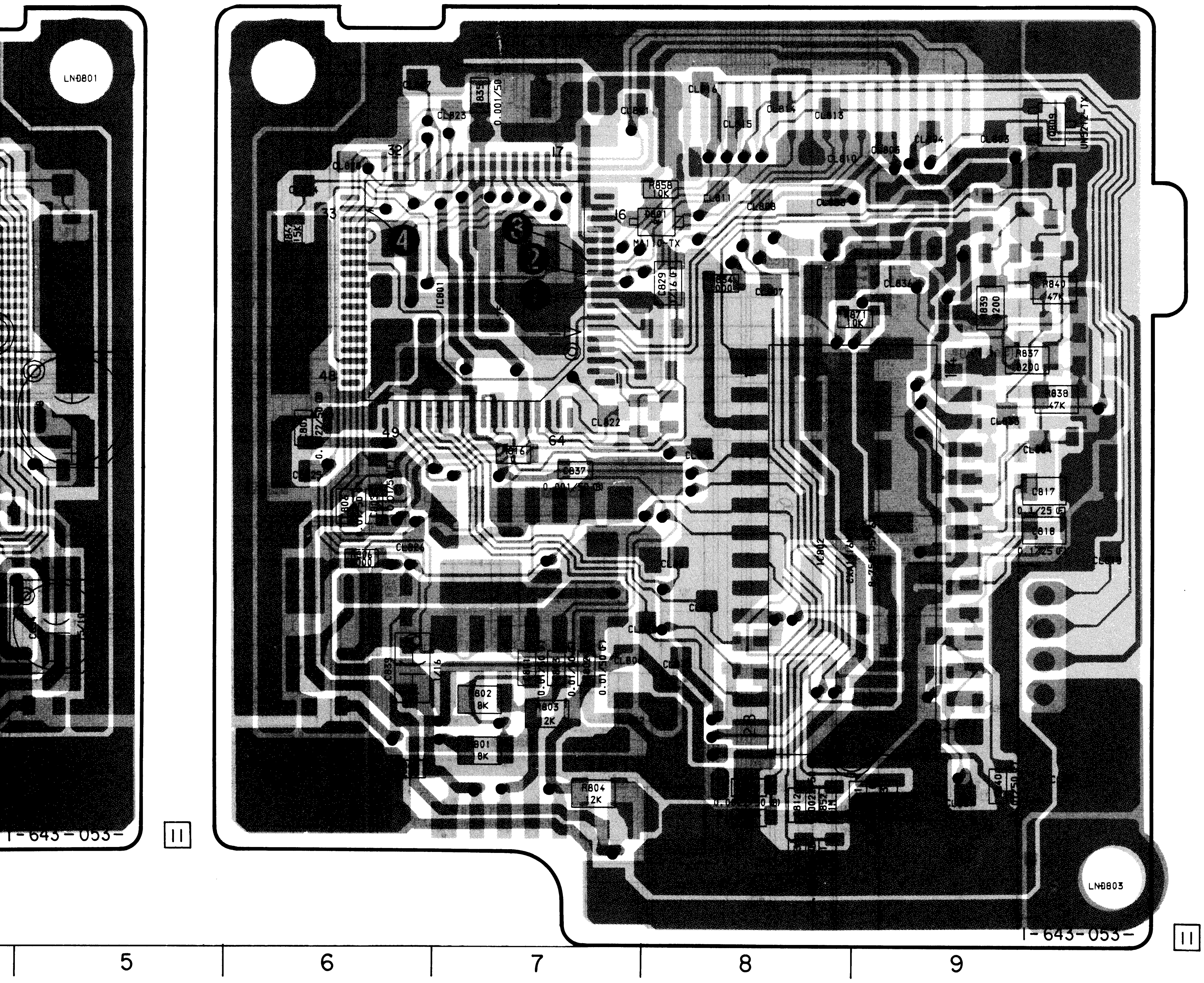
AF - 89P BOARD (COMPONENT SIDE)


A
B
C
D
1
2
3
4
5
09
1-643-061-11
17
R810
5.6
LND801
R809
C810
0.01/50 (F)
C833
Q802
R868
220
C820
C804
IC803
1-752-33
R821
1000
R825
1000
C827
220P/50 (SL)
C824
220P/50 (SL)
IC804
8-759-
R809
1000
R808
1000
Q801
1-643-053-
11

AF - 8



AF-89P BOARD (CONDUCTOR SIDE)



LN0801
LN0803
IC801
IC802
1-643-053-
11
1-643-053-
11
5
6
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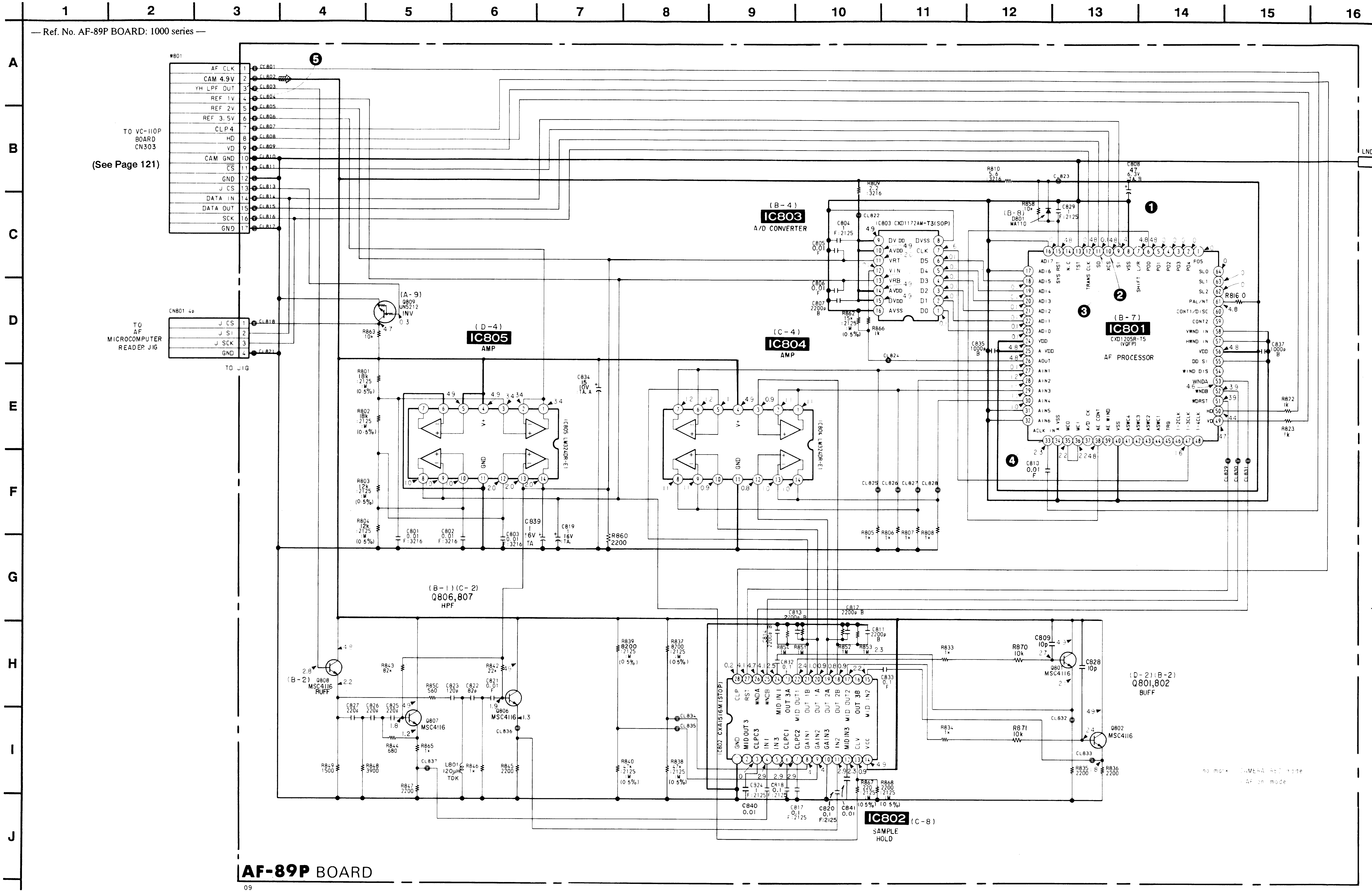
8
9

AF-89P (AUTO FOCUS) SCHEMATIC DIAGRAM

— Ref. No. AF-89P BOARD: 1000 series —


1
2
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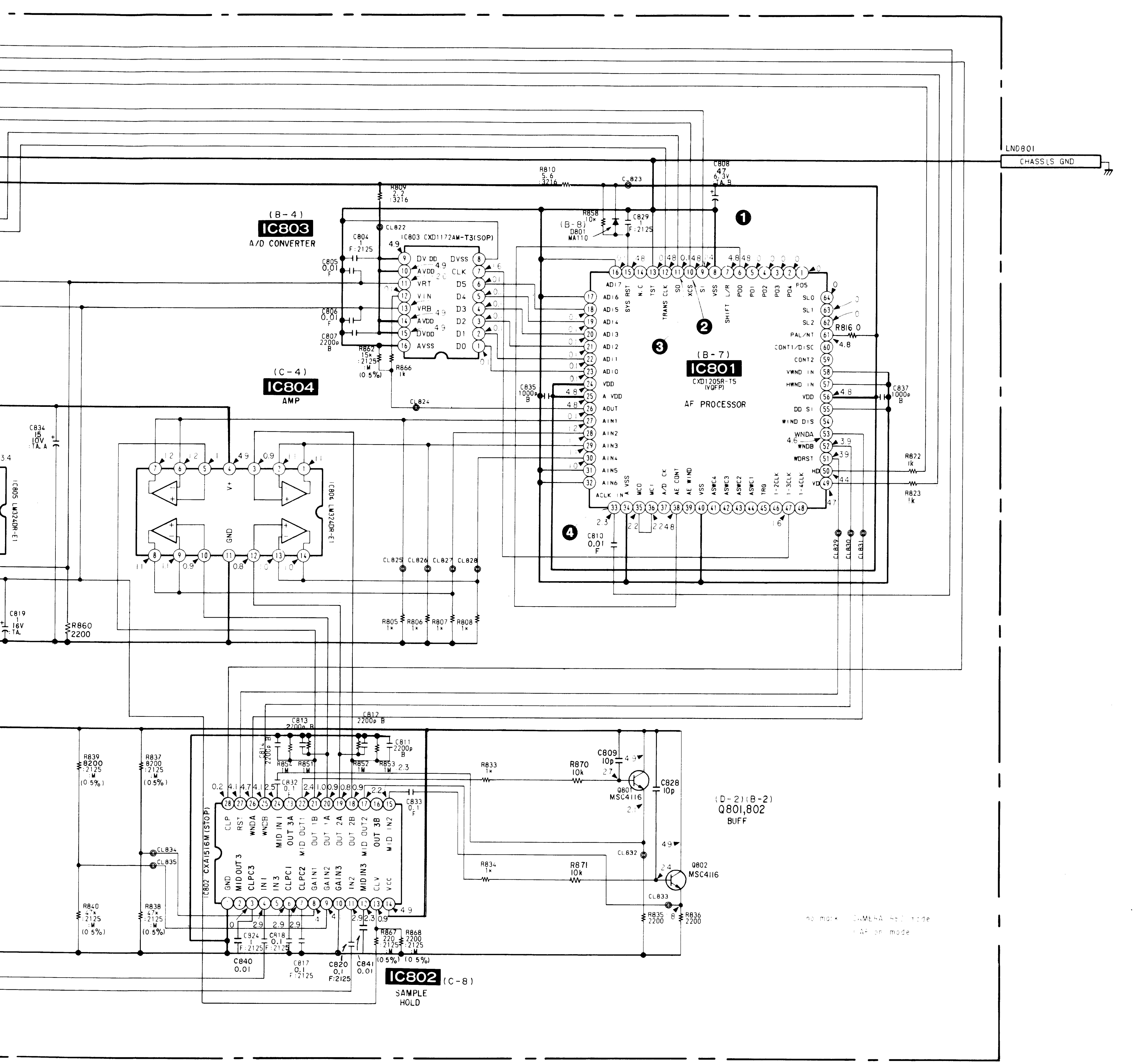
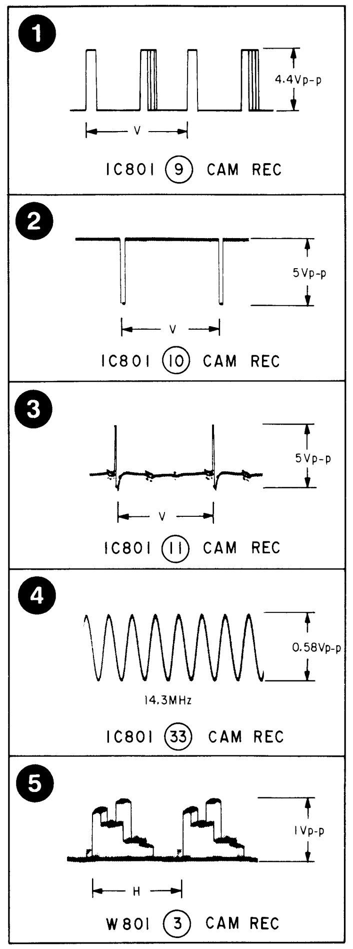
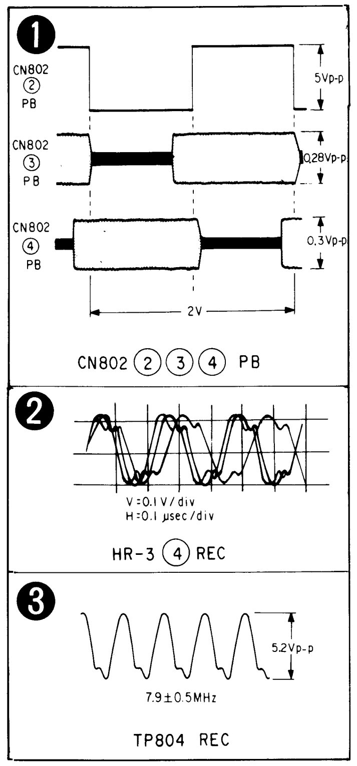
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
TO VC-110P BOARD CN303
(See Page 121)
AF CLK
CAM 4.9V
YH LPF OUT
REF 1V
REF 2V
REF 3.5V
CLP4
HD
VD
CAM GND
CS
GND
J CS
DATA IN
DATA OUT
SCK
GND
CN801 4P
TO AF MICROCOMPUTER READER JIG
J CS
J SI
J SCK
GND
TO JIG
(A-9) Q809 UN5212 INV
(D-4) IC805 AMP
IC805 LM324DR-E1
(C-4) IC804 AMP
IC804 LM324DR-E1
(B-4) IC803 A/D CONVERTER
IC803 CXD1172AM-T3(SOP)
(B-8) D801 MA110
(B-7) IC801 CXD1205R-T5 (VQFP)
AF PROCESSOR
(B-1)(C-2) Q806,807 HPF
(B-2) Q808 MSC4116 BUFF
Q807 MSC4116
Q806 MSC4116
L801 120µH TDK
IC802 CXA1516M(STOP)
IC802 (C-8) SAMPLE HOLD
(D-2)(B-2) Q801,802 BUFF
Q801 MSC4116
Q802 MSC4116
AF-89P BOARD
09


LND801
CHASSIS GND
(B-4)
IC803
A/D CONVERTER
IC803 CXD1172AM-T3(SOP)
(C-4)
IC804
AMP
IC804 LM324DR-E1
IC805 LM324DR-E1
(B-7)
IC801
CXD1205R-T5 (VQFP)
AF PROCESSOR
(B-8)
D801
MA110
IC802
(C-8)
SAMPLE HOLD
IC802 CXA1516M(SOP)
(D-2)(B-2)
Q801,802
BUFF
Q801 MSC4116
Q802 MSC4116
no mark : CAMERA REC mode
: AF on mode

AF-89P BOARD


❶
4.4Vp-p
V
IC801 ⑨ CAM REC
❷
5Vp-p
V
IC801 ⑩ CAM REC
❸
5Vp-p
V
IC801 ⑪ CAM REC
❹
0.58Vp-p
14.3MHz
IC801 ㉝ CAM REC
❺
1Vp-p
H
W801 ③ CAM REC

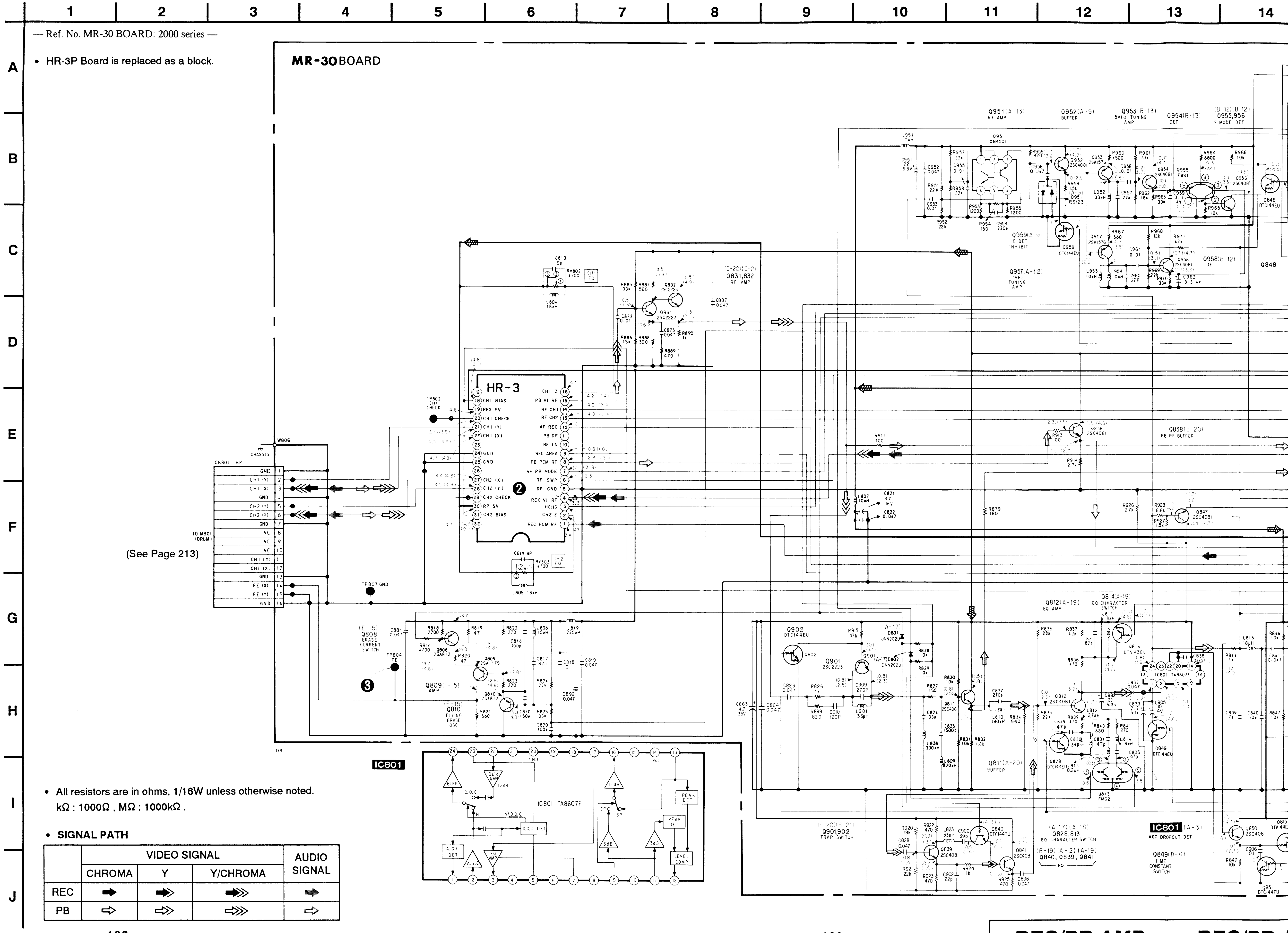
MR-30 BOARD



MR-30 (REC/PB AMP) SCHEMATIC DIAGRAM

— Ref. No. MR-30 BOARD: 2000 series —

- HR-3P Board is replaced as a block.


1
2
3
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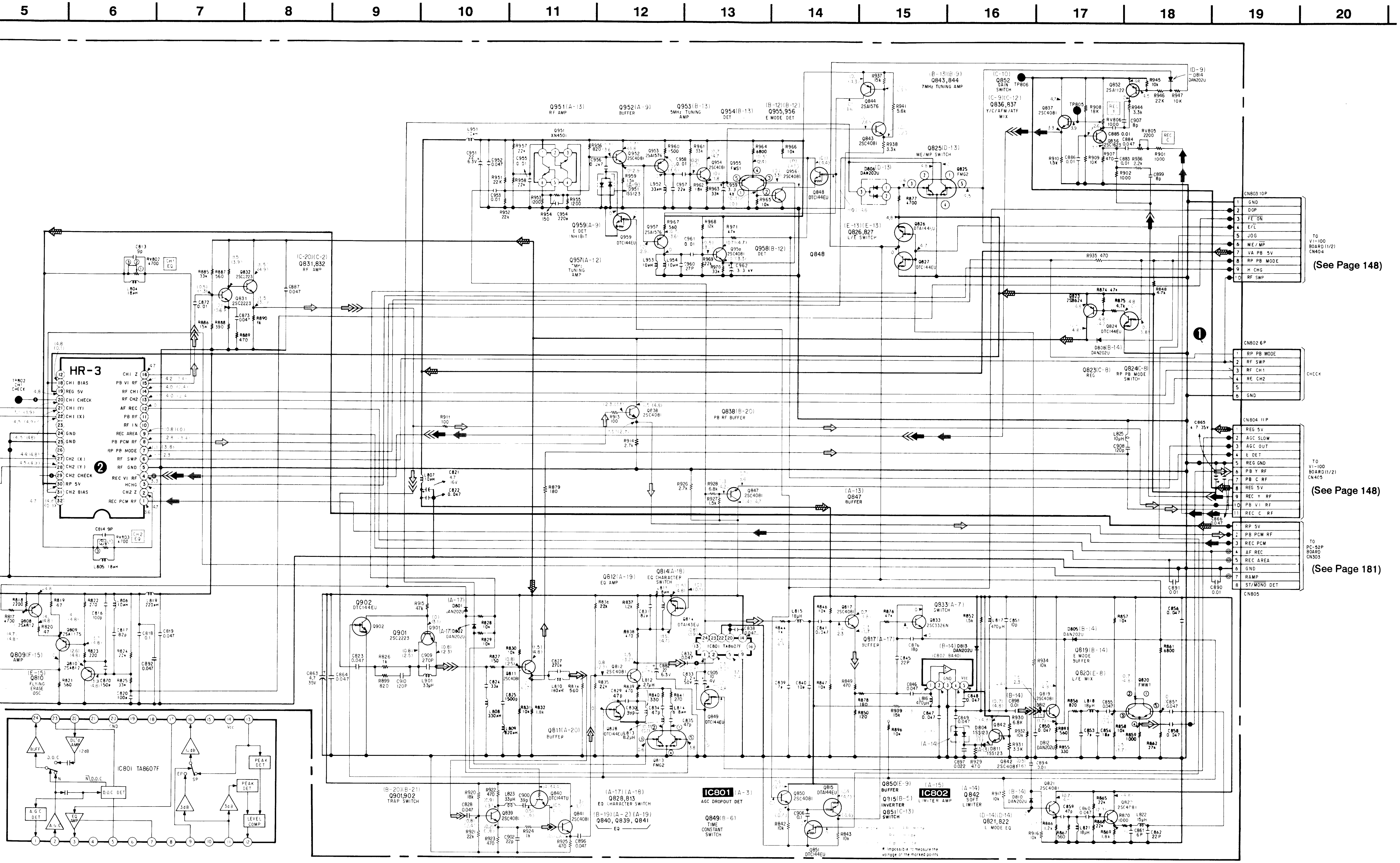
10
11
12
13
14
A
B
C
D
E
F
G
H
I
J
MR-30 BOARD
HR-3
CN801 16P
TO M901 (DRUM)
(See Page 213)
W806
CHASSIS
GND
CH1 (Y)
CH1 (X)
CH2 (Y)
CH2 (X)
NC
FE (X)
FE (Y)
TP802 CH1 CHECK
TP807 GND
TP804 FE
CH1 BIAS
REG 5V
CH1 CHECK
CH2 CHECK
RP 5V
CH2 BIAS
CH1 Z
PB VI RF
RF CH1
RF CH2
AF REC
PB RF
RF IN
REC AREA
PB PCM RF
RP PB MODE
RF SWP
RF GND
REC VI RF
HCHG
CH2 Z
REC PCM RF
Q831,832 RF AMP
Q808 ERASE CURRENT SWITCH
Q809 AMP
Q810 FLYING ERASE OSC
Q951 RF AMP
Q952 BUFFER
Q953 5MHz TUNING AMP
Q954 DET
Q955,956 E MODE DET
Q957 7MHz TUNING AMP
Q958 DET
Q959 E DET INHIBIT
Q838 PB RF BUFFER
Q847
Q848
Q812 EQ AMP
Q814 EQ CHARACTER SWITCH
Q811 BUFFER
Q813 FMG2
Q849 DTC144EU
Q901,902 TRAP SWITCH
Q828,813 EQ CHARACTER SWITCH
Q840, Q839, Q841 EQ
IC801 AGC DROPOUT DET
Q849 TIME CONSTANT SWITCH
IC801
IC801 TA8607F
BUFF
D.O.C
DL/4 AMP
D.O.C DET
A.G.C DET
EQ AMP
PEAK DET
LEVEL COMP
EFO
SP
3dB
Vcc
GND

- All resistors are in ohms, 1/16W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡⋙	➡
PB	⇨	⇨»	⇨⋙	⇨



5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
HR-3
IC801 TA8607F
Q951(A-13) RF AMP
Q952(A-9) BUFFER
Q953(B-13) 5MHz TUNING AMP
Q954(B-13) DET
(B-12)(B-12) Q955,956 E MODE DET
(B-13)(B-9) Q843,844 7MHz TUNING AMP
(C-10) Q852 GAIN SWITCH
(C-9)(C-12) Q836,837 Y/C/AFM/ATF MIX
Q825(D-13) ME/MP SWITCH
(E-13)(E-13) Q826,827 L/E SWITCH
Q959(A-9) E DET INHIBIT
Q957(A-12) 7MHz TUNING AMP
Q958(B-12) DET
Q848
(C-20)(C-2) Q831,832 RF AMP
Q823(C-8) REG
Q824(C-8) RP PB MODE SWITCH
Q838(B-20) PB RF BUFFER
(A-13) Q847 BUFFER
Q812(A-19) EQ AMP
Q814(A-18) EQ CHARACTER SWITCH
Q902
Q901 2SC2223
Q811(A-20) BUFFER
Q809(F-15) AMP
(E-15) Q810 FLYING ERASE OSC
(B-20)(B-21) Q901,902 TRAP SWITCH
(A-17)(A-18) Q828,813 EQ CHARACTER SWITCH
(B-19)(A-21)(A-19) Q840, Q839, Q841 EQ
IC801 (A-3) AGC DROPOUT DET
Q849(B-6) TIME CONSTANT SWITCH
Q850(E-9) BUFFER
Q915(B-5) INVERTER
Q851(C-13) SWITCH
IC802 LIMITER AMP
(A-14) Q842 SOFT LIMITER
(D-14)(D-14) Q821,822 L MODE EQ
Q833(A-7) SWITCH
Q817(A-17) BUFFER
Q819(B-14) E MODE BUFFER
Q820(E-8) L/E MIX
CN803 10P
GND
DOP
FE ON
E/L
JOG
ME/MP
VA PB 5V
RP PB MODE
H CHG
RF SWP
TO VI-100 BOARD(1/2) CN404
(See Page 148)
CN802 6P
RP PB MODE
RF SWP
RF CH1
RF CH2
GND
CHECK
CN804 11P
REG 5V
AGC SLOW
AGC OUT
E DET
REG GND
PB Y RF
PB C RF
REG 5V
REC Y RF
PB VI RF
REC C RF
TO VI-100 BOARD(1/2) CN405
(See Page 148)
RP 5V
PB PCM RF
REC PCM
AF REC
REC AREA
GND
RAMP
ST/MONO DET
CN805
TO PC-52P BOARD CN303
(See Page 181)
* Impossible to measure the voltage of the marked points.

REC/PB AMP REC/PB AMP

MR-30 (REC/PB AMP) PRINTED WIRING BOARD

— Ref. No. MR-30 BOARD: 2000 series —

〈 DIODE 〉

D801	8-719-941-86	DIODE	DAN202U
D802	8-719-941-86	DIODE	DAN202U
D804	8-719-800-76	DIODE	1SS226
D805	8-719-941-86	DIODE	DAN202U
D806	8-719-941-86	DIODE	DAN202U
D808	8-719-941-86	DIODE	DAN202U
D810	8-719-941-86	DIODE	DAN202U
D811	8-719-800-76	DIODE	1SS226
D812	8-719-941-86	DIODE	DAN202U
D813	8-719-941-86	DIODE	DAN202U
D814	8-719-941-86	DIODE	DAN202U
D951	8-719-800-76	DIODE	1SS226

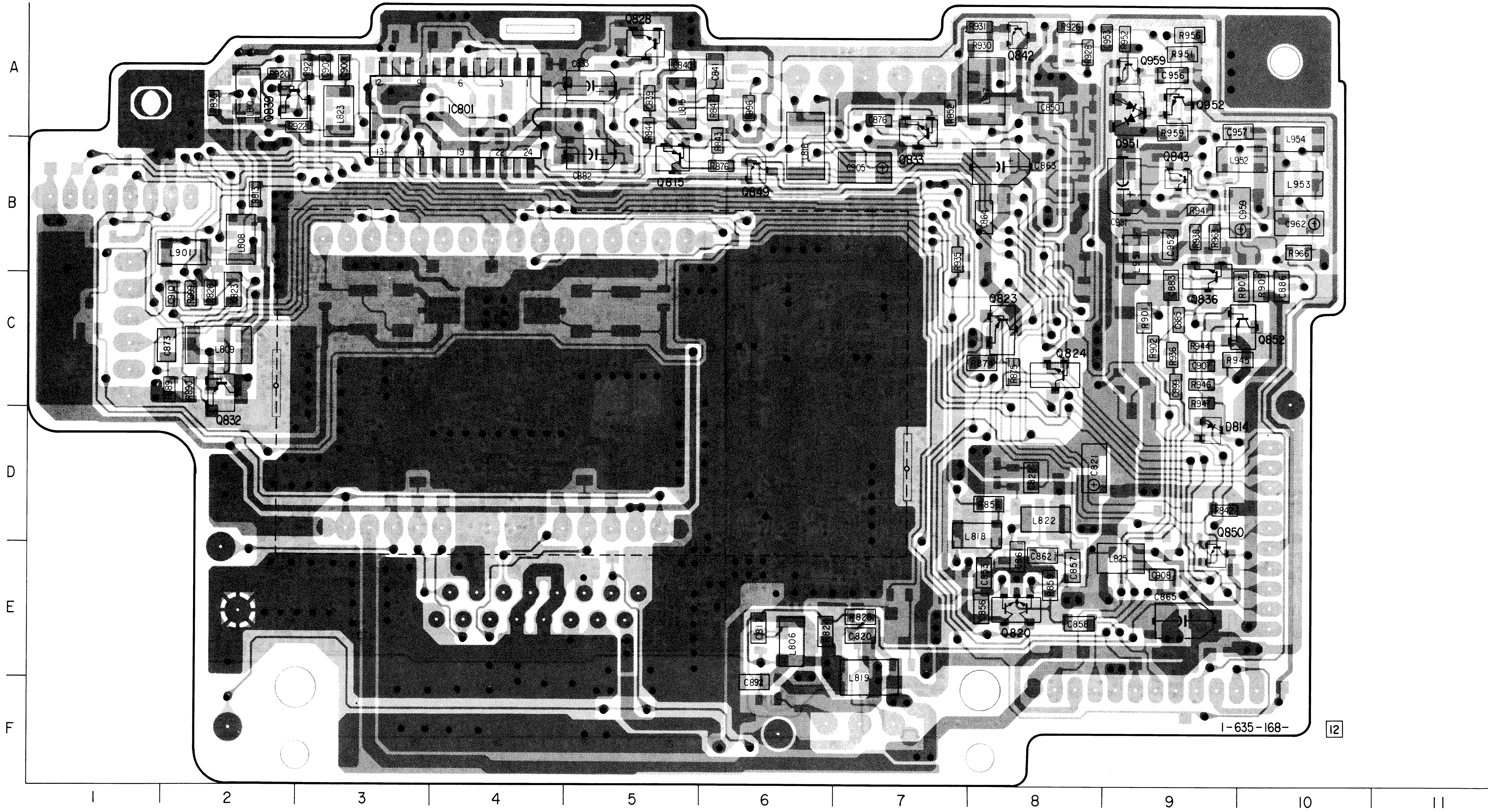
〈 IC 〉

IC801	8-759-233-94	IC	TA8607F
IC802	8-759-925-60	IC	BA401

〈 TRANSISTOR 〉

Q808	8-729-216-22	TRANSISTOR	2SA1162-G
Q809	8-729-119-76	TRANSISTOR	2SA1175-HFE
Q810	8-729-216-22	TRANSISTOR	2SA1162-G
Q811	8-729-905-35	TRANSISTOR	2SC4081-R
Q812	8-729-905-35	TRANSISTOR	2SC4081-R
Q813	8-729-403-07	TRANSISTOR	XN1213
Q814	8-729-905-45	TRANSISTOR	DTA143EU
Q815	8-729-905-09	TRANSISTOR	DTA144WU
Q817	8-729-905-35	TRANSISTOR	2SC4081-R
Q819	8-729-905-35	TRANSISTOR	2SC4081-R
Q820	8-729-402-13	TRANSISTOR	XN1501
Q821	8-729-905-35	TRANSISTOR	2SC4081-R
Q822	8-729-905-35	TRANSISTOR	2SC4081-R
Q823	8-729-141-48	TRANSISTOR	2SB624-BV345
Q824	8-729-402-42	TRANSISTOR	UN5213
Q825	8-729-403-07	TRANSISTOR	XN1213
Q826	8-729-403-35	TRANSISTOR	UN5113
Q827	8-72		
Q828	8-72		
Q831	8-72		
Q832	8-72		
Q833	8-72		
Q836	8-72		
Q837	8-72		
Q838	8-72		

MR-30 BOARD (COMPONENT SIDE)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IC801
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Q830
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C882
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C962
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C821
C857
C862
C858
C865
C873
C820
C892
R931
R930
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R959
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R966
R907
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R901
R902
R944
R945
R946
R947
R876
I-635-168-
12

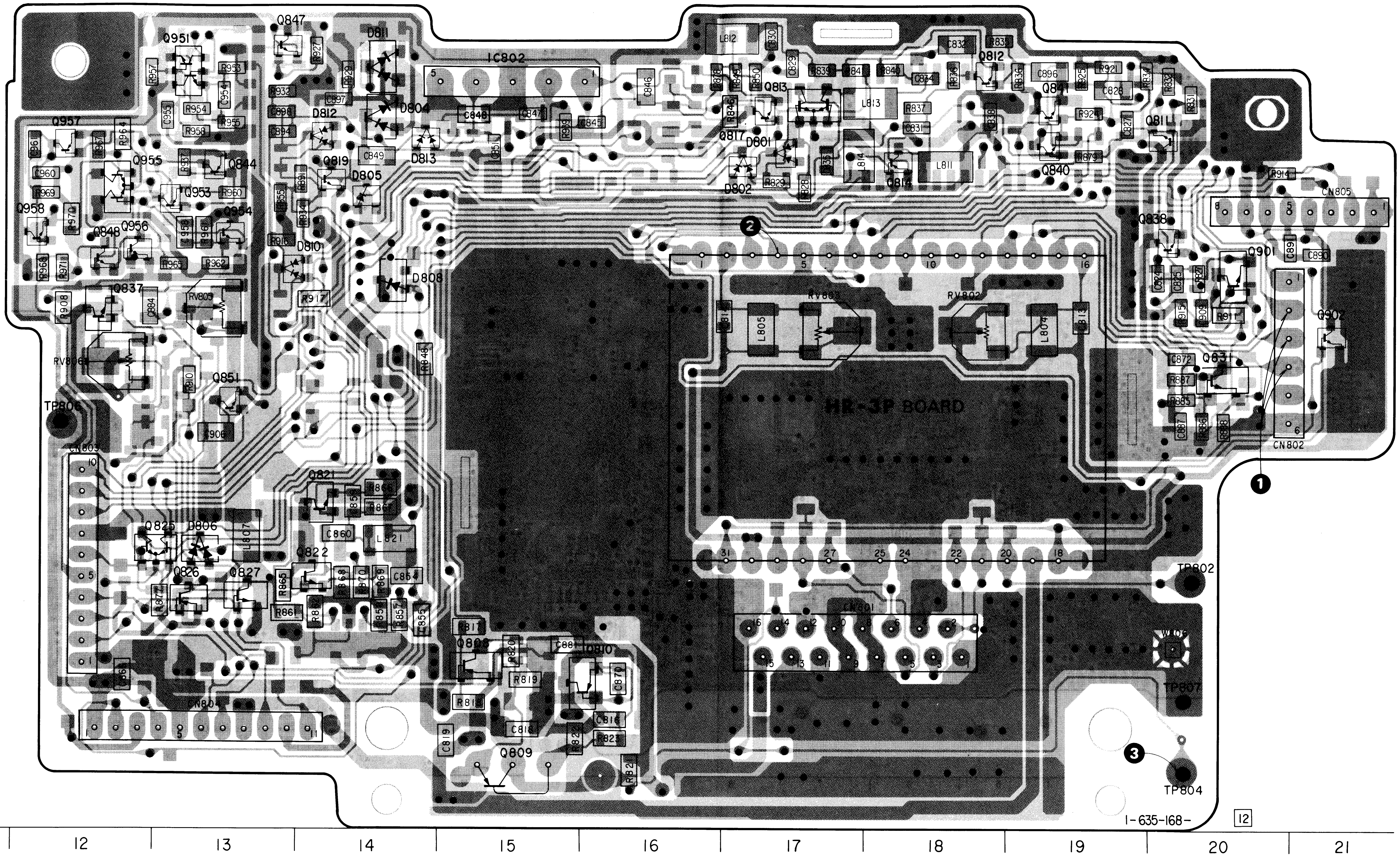
SC4081-R
SC4081-R

J1501
SC4081-R
SC4081-R
B624-BV345
5213

1213
5113

Q827	8-729-402-42	TRANSISTOR	UN5213
Q828	8-729-907-00	TRANSISTOR	DTC114EU
Q831	8-729-102-07	TRANSISTOR	2SC2223-F13
Q832	8-729-102-07	TRANSISTOR	2SC2223-F13
Q833	8-729-202-38	TRANSISTOR	2SC3326N-A
Q836	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q837	8-729-905-35	TRANSISTOR	2SC4081-R
Q838	8-729-905-35	TRANSISTOR	2SC4081-R
Q839	8-729-905-35	TRANSISTOR	2SC4081-R
Q840	8-729-905-XX	TRANSISTOR	DTC114TUT106
Q841	8-729-905-35	TRANSISTOR	2SC4081-R
Q842	8-729-905-35	TRANSISTOR	2SC4081-R
Q843	8-729-905-35	TRANSISTOR	2SC4081-R
Q844	8-729-905-23	TRANSISTOR	2SA1576-R
Q847	8-729-905-35	TRANSISTOR	2SC4081-R
Q848	8-729-402-42	TRANSISTOR	UN5213
Q849	8-729-402-42	TRANSISTOR	UN5213
Q850	8-729-905-35	TRANSISTOR	2SC4081-R
Q851	8-729-402-42	TRANSISTOR	UN5213
Q852	8-729-216-22	TRANSISTOR	2SA1162-G
Q901	8-729-102-07	TRANSISTOR	2SC2223-F13
Q902	8-729-402-42	TRANSISTOR	UN5213
Q951	8-729-402-81	TRANSISTOR	XN4501
Q952	8-729-905-35	TRANSISTOR	2SC4081-R
Q953	8-729-905-23	TRANSISTOR	2SA1576-R
Q954	8-729-905-35	TRANSISTOR	2SC4081-R
Q955	8-729-403-42	TRANSISTOR	XN1401
Q956	8-729-905-35	TRANSISTOR	2SC4081-R
Q957	8-729-905-23	TRANSISTOR	2SA1576-R
Q958	8-729-905-35	TRANSISTOR	2SC4081-R
Q959	8-729-402-42	TRANSISTOR	UN5213

MR-30 BOARD (CONDUCTOR SIDE)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D806
Q826
Q827
Q821
Q822
CN804
D811
D804
D812
D813
Q819
D805
D810
D808
IC802
Q808
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Q840
CN805
Q838
Q901
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RV803
RV802
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Q831
CN802
MR-3P BOARD
CN801
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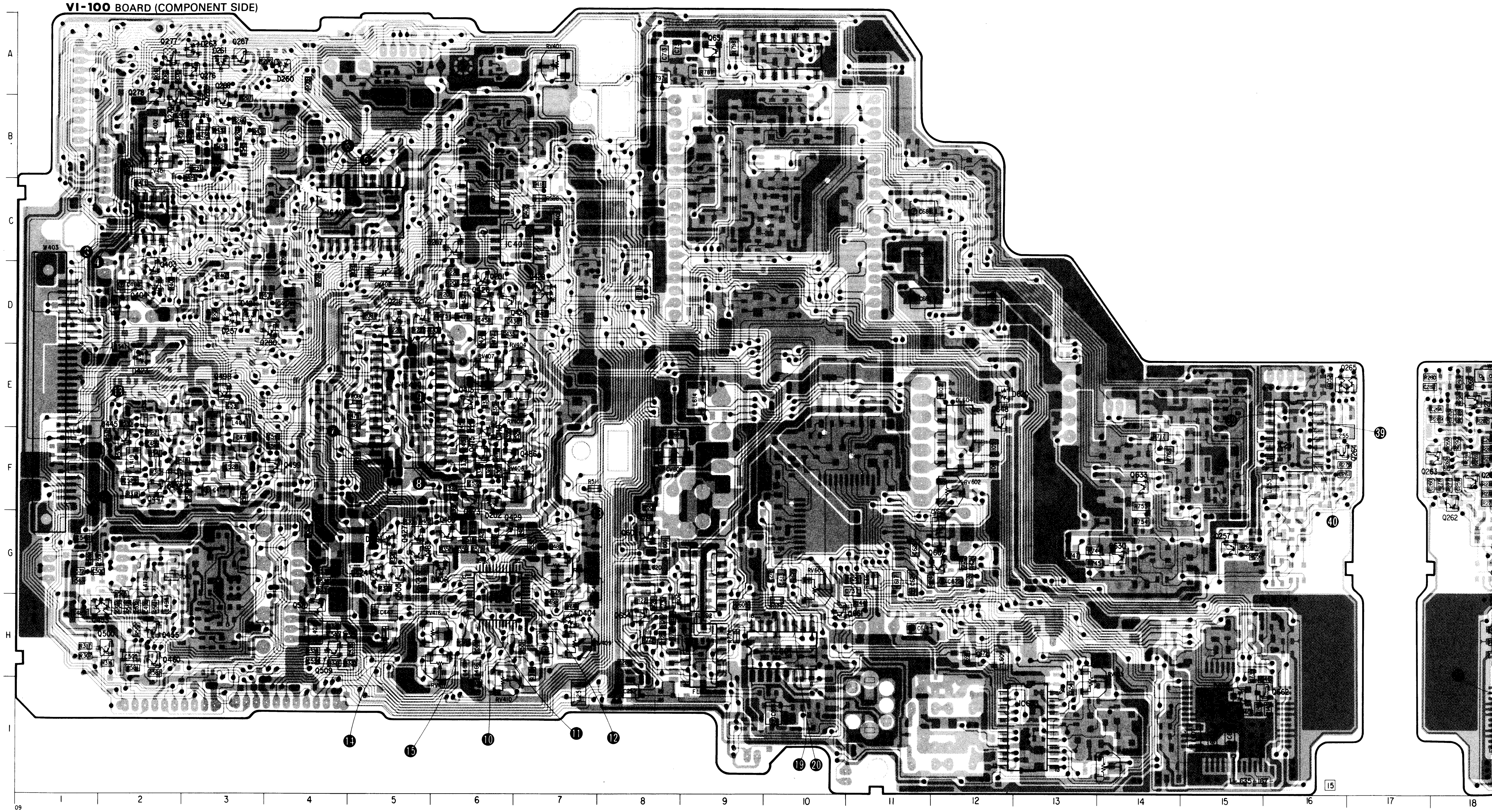
VI-100 (VIDEO SIGNAL PROCESS) PRINTED WIRING BOARD

— Ref. No. VI-100 BOARD: 2000 series —


VI-100 BOARD (COMPONENT SIDE)
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IC401
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IC601
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Q263
Q264
Q277
Q267
Q276
Q278
Q403
Q404
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Q408
Q500
Q509
Q631
Q602
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D640
L255
L614
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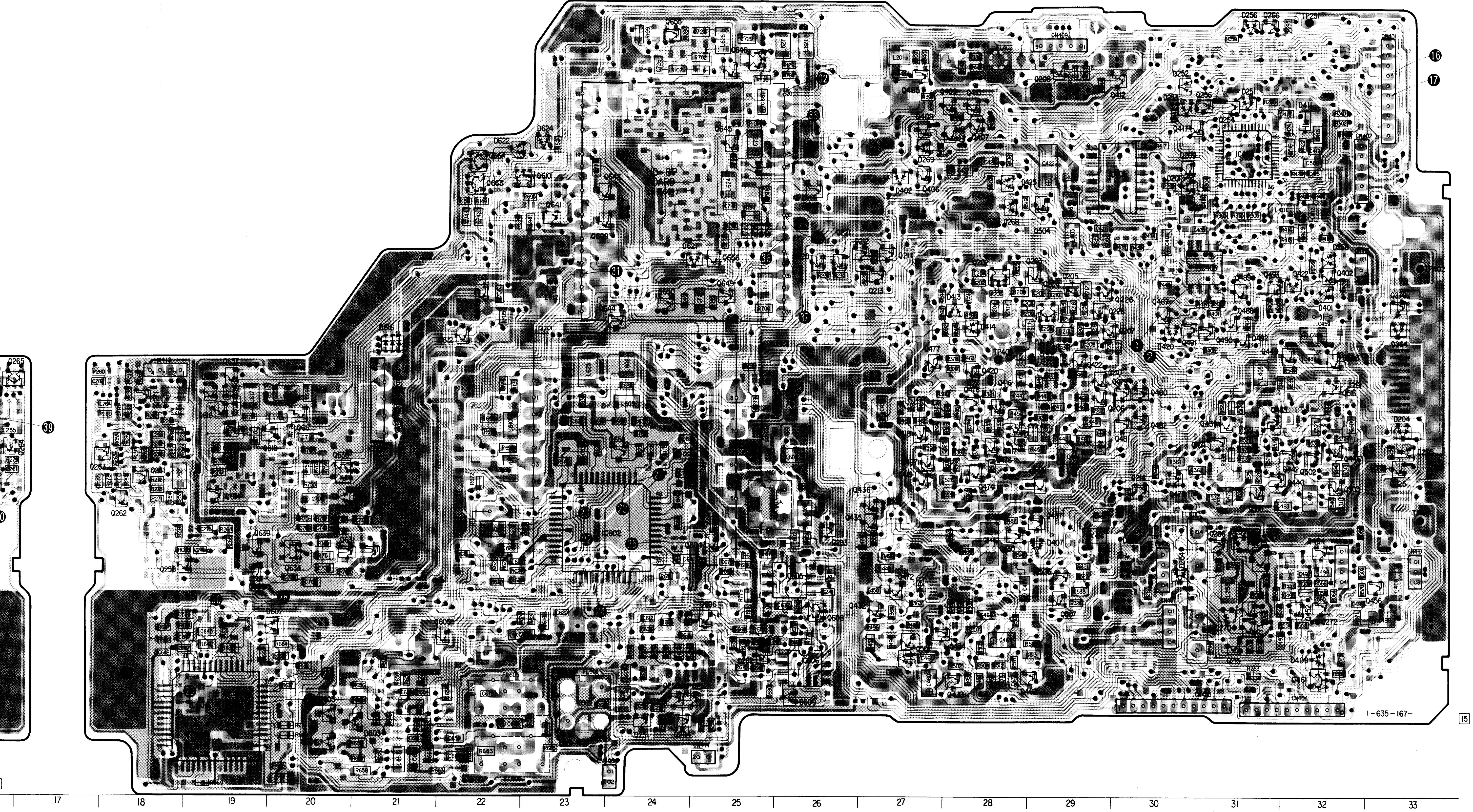
VIDEO VIDEO

VI-100 BOARD (CONDUCTOR SIDE)



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Q663
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Q485
Q403
Q406
Q408
Q402
Q407
Q269
Q268
Q504
Q412
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Q203
Q205
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Q436
Q435
Q472
Q433
Q462
Q405
Q407
Q251
Q256
Q266
TP251
Q252
Q253
Q254
Q235
D411
D201
D209
Q492
Q490
Q488
Q489
Q487
Q401
Q402
Q422
Q440
Q442
Q502
Q503
Q264
D204
Q204
Q225
Q409
Q461
Q456
Q272
Q215
R283
CN409
CN401
CN404
CN410
D402
L201
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Q402	8-729-810-13	TRANSISTOR	2SA1677
Q403	8-729-810-13	TRANSISTOR	2SA1677
Q404	8-729-402-42	TRANSISTOR	UN5213
Q406	8-729-402-42	TRANSISTOR	UN5213
Q407	8-729-905-35	TRANSISTOR	2SC4081-R
Q408	8-729-402-42	TRANSISTOR	UN5213
Q409	8-729-402-42	TRANSISTOR	UN5213
Q410	8-729-905-35	TRANSISTOR	2SC4081-R
Q411	8-729-403-35	TRANSISTOR	UN5113
Q412	8-729-202-38	TRANSISTOR	2SC3326N-A
Q415	8-729-402-42	TRANSISTOR	UN5213
Q416	8-729-402-42	TRANSISTOR	UN5213
Q417	8-729-402-42	TRANSISTOR	UN5213
Q418	8-729-402-42	TRANSISTOR	UN5213
Q419	8-729-402-42	TRANSISTOR	UN5213
Q420	8-729-403-35	TRANSISTOR	UN5113
Q422	8-729-905-23	TRANSISTOR	2SA1576-R
Q424	8-729-202-38	TRANSISTOR	2SC3326N-A
Q426	8-729-202-38	TRANSISTOR	2SC3326N-A
Q427	8-729-905-35	TRANSISTOR	2SC4081-R
Q428	8-729-907-39	TRANSISTOR	IMD2
Q429	8-729-905-35	TRANSISTOR	2SC4081-R
Q430	8-729-216-22	TRANSISTOR	2SA1162-G
Q431	8-729-402-42	TRANSISTOR	UN5213
Q432	8-729-402-42	TRANSISTOR	UN5213
Q433	8-729-403-35	TRANSISTOR	UN5113
Q434	8-729-905-35	TRANSISTOR	2SC4081-R
Q435	8-729-402-42	TRANSISTOR	UN5213
Q436	8-729-402-42	TRANSISTOR	UN5213
Q437	8-729-905-09	TRANSISTOR	DTA144WU
Q438	8-729-905-35	TRANSISTOR	2SC4081-R
Q439	8-729-905-35	TRANSISTOR	2SC4081-R
Q440	8-729-905-35	TRANSISTOR	2SC4081-R
Q441	8-729-905-35	TRANSISTOR	2SC4081-R
Q442	8-729-905-35	TRANSISTOR	2SC4081-R
Q443	8-729-905-45	TRANSISTOR	DTA143EU
Q445	8-729-905-35	TRANSISTOR	2SC4081-R
Q446	8-729-905-35	TRANSISTOR	2SC4081-R
Q447	8-729-905-35	TRANSISTOR	2SC4081-R
Q448	8-729-141-48	TRANSISTOR	2SB624-BV345
Q449	8-729-402-42	TRANSISTOR	UN5213
Q452	8-729-905-35	TRANSISTOR	2SC4081-R
Q453	8-729-402-13	TRANSISTOR	XN1501
Q454	8-729-402-42	TRANSISTOR	UN5213
Q455	8-729-403-35	TRANSISTOR	UN5113
Q456	8-729-905-35	TRANSISTOR	2SC4081-R
Q460	8-729-905-35	TRANSISTOR	2SC4081-R
Q461	8-729-403-07	TRANSISTOR	XN1213
Q462	8-729-402-42	TRANSISTOR	UN5213
Q469	8-729-216-22	TRANSISTOR	2SA1162-G
Q470	8-729-905-35	TRANSISTOR	2SC4081-R
Q471	8-729-402-42	TRANSISTOR	UN5213
Q472	8-729-216-22	TRANSISTOR	2SA1162-G
Q473	8-729-102-07	TRANSISTOR	2SC2223-F13
Q474	8-729-102-07	TRANSISTOR	2SC2223-F13
Q475	8-729-905-23	TRANSISTOR	2SA1576-R
Q476	8-729-905-35	TRANSISTOR	2SC4081-R
Q477	8-729-905-35	TRANSISTOR	2SC4081-R
Q478	8-729-905-23	TRANSISTOR	2SA1576-R
Q479	8-729-403-35	TRANSISTOR	UN5113
Q480	8-729-402-42	TRANSISTOR	UN5213
Q481	8-729-403-35	TRANSISTOR	UN5113
Q482	8-729-402-42	TRANSISTOR	UN5213
Q483	8-729-402-42	TRANSISTOR	UN5213
Q485	8-729-905-23	TRANSISTOR	2SA1576-R
Q486	8-729-905-23	TRANSISTOR	2SA1576-R
Q487	8-729-402-42	TRANSISTOR	UN5213
Q488	8-729-810-13	TRANSISTOR	2SA1677
Q489	8-729-810-13	TRANSISTOR	2SA1677
Q490	8-729-402-42	TRANSISTOR	UN5213
Q491	8-729-905-23	TRANSISTOR	2SA1576-R
Q492	8-729-402-42	TRANSISTOR	UN5213
Q493	8-729-402-42	TRANSISTOR	UN5213
Q497	8-729-402-42	TRANSISTOR	UN5213
Q498	8-729-403-35	TRANSISTOR	UN5113
Q499	8-729-403-35	TRANSISTOR	UN5113
Q500	8-729-905-35	TRANSISTOR	2SC4081-R
Q501	8-729-905-23	TRANSISTOR	2SA1576-R
Q502	8-729-905-23	TRANSISTOR	2SA1576-R
Q503	8-729-905-35	TRANSISTOR	2SC4081-R
Q504	8-729-905-23	TRANSISTOR	2SA1576-R
Q505	8-729-905-35	TRANSISTOR	2SC4081-R
Q506	8-729-402-42	TRANSISTOR	UN5213
Q507	8-729-905-23	TRANSISTOR	2SA1576-R
Q509	8-729-905-35	TRANSISTOR	2SC4081-R
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Q513	8-729-403-35	TRANSISTOR	UN5113
Q601	8-729-216-22	TRANSISTOR	2SA1162-G
Q602	8-729-905-23	TRANSISTOR	2SA1576-R
Q604	8-729-905-35	TRANSISTOR	2SC4081-R
Q605	8-729-402-42	TRANSISTOR	UN5213
Q606	8-729-905-35	TRANSISTOR	2SC4081-R
Q608	8-729-403-07	TRANSISTOR	XN1213
Q609	8-729-805-45	TRANSISTOR	2SC3395
Q610	8-729-403-07	TRANSISTOR	XN1213
Q612	8-729-805-45	TRANSISTOR	2SC3395
Q613	8-729-141-48	TRANSISTOR	2SB624-BV345
Q614	8-729-403-35	TRANSISTOR	UN5113
Q615	8-729-905-45	TRANSISTOR	DTA143EU
Q616	8-729-905-23	TRANSISTOR	2SA1576-R
Q617	8-729-905-35	TRANSISTOR	2SC4081-R
Q618	8-729-905-35	TRANSISTOR	2SC4081-R
Q630	8-729-805-45	TRANSISTOR	2SC3395
Q631	8-729-100-66	TRANSISTOR	2SC1623-L6
Q632	8-729-100-66	TRANSISTOR	2SC1623-L6
Q633	8-729-805-69	TRANSISTOR	2SA1341
Q634	8-729-403-07	TRANSISTOR	XN1213
Q636	8-729-403-06	TRANSISTOR	XN1113
Q638	8-729-805-69	TRANSISTOR	2SA1341
Q639	8-729-805-45	TRANSISTOR	2SC3395
Q640	8-729-805-69	TRANSISTOR	2SA1341
Q641	8-729-805-69	TRANSISTOR	2SA1341
Q642	8-729-805-45	TRANSISTOR	2SC3395
Q644	8-729-805-45	TRANSISTOR	2SC3395
Q645	8-729-905-35	TRANSISTOR	2SC4081-R
Q646	8-729-903-10	TRANSISTOR	FMW1
Q647	8-729-216-22	TRANSISTOR	2SA1162-G
Q648	8-729-100-66	TRANSISTOR	2SC1623-L6
Q649	8-729-905-35	TRANSISTOR	2SC4081-R
Q650	8-729-100-66	TRANSISTOR	2SC1623-L6
Q651	8-729-805-69	TRANSISTOR	2SA1341
Q652	8-729-100-66	TRANSISTOR	2SC1623-L6
Q654	8-729-905-35	TRANSISTOR	2SC4081-R
Q655	8-729-905-15	TRANSISTOR	DTC144WU
Q656	8-729-402-42	TRANSISTOR	UN5213
Q657	8-729-403-35	TRANSISTOR	UN5113
Q661	8-729-403-35	TRANSISTOR	UN5113
Q662	8-729-905-23	TRANSISTOR	2SA1576-R
Q663	8-729-403-07	TRANSISTOR	XN1213
Q664	8-729-403-06	TRANSISTOR	XN1113

(DIODE)

D201	8-719-941-09	DIODE	DAP202U
D202	8-719-941-86	DIODE	DAN202U
D204	8-719-941-86	DIODE	DAN202U
D205	8-719-941-86	DIODE	DAN202U
D251	8-719-941-86	DIODE	DAN202U
D252	8-719-941-86	DIODE	DAN202U
D253	8-719-941-86	DIODE	DAN202U
D254	8-719-941-09	DIODE	DAP202U
D256	8-719-941-86	DIODE	DAN202U
D257	8-719-941-86	DIODE	DAN202U
D258	8-719-941-86	DIODE	DAN202U
D259	8-719-941-86	DIODE	DAN202U
D260	8-719-941-86	DIODE	DAN202U
D261	8-719-941-86	DIODE	DAN202U
D263	8-719-941-86	DIODE	DAN202U
D264	8-719-941-86	DIODE	DAN202U
D267	8-719-106-16	DIODE	RD6.8M-B1
D268	8-719-941-86	DIODE	DAN202U
D269	8-719-941-09	DIODE	DAP202U
D270	8-719-941-86	DIODE	DAN202U
D401	8-719-941-86	DIODE	DAN202U
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D404	8-719-941-86	DIODE	DAN202U
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D407	8-719-941-86	DIODE	DAN202U
D409	8-719-941-86	DIODE	DAN202U
D411	8-719-949-46	DIODE	1T32
D413	8-719-941-86	DIODE	DAN202U
D414	8-719-941-86	DIODE	DAN202U
D418	8-719-800-76	DIODE	1SS226
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D424	8-719-941-86	DIODE	DAN202U
D425	8-719-941-86	DIODE	DAN202U
D602	8-719-800-76	DIODE	1SS226
D603	8-719-400-18	DIODE	MA152WK
D604	8-719-800-76	DIODE	1SS226
D605	8-719-800-76	DIODE	1SS226
D609	8-719-941-86	DIODE	DAN202U
D614	8-719-800-76	DIODE	1SS226
D616	8-719-404-40	DIODE	MA121
D620	8-719-941-86	DIODE	DAN202U
D621	8-719-941-86	DIODE	DAN202U
D622	8-719-941-86	DIODE	DAN202U
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D624	8-719-820-05	DIODE	1SS181

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IC251	8-759-012-00	IC	MC10H116M
IC401	8-759-710-86	IC	NJM2233BM
IC403	8-759-710-29	IC	NJM2235M
IC404	8-759-710-29	IC	NJM2235M
IC405	8-759-009-22	IC	MC14094BF
IC406	8-759-970-80	IC	MB673198U
IC407	8-759-061-75	IC	uPD6451AGT-061-E2
IC408	8-759-710-12	IC	NJM2230M
IC409	8-752-031-01	IC	CXA1047M
IC410	8-752-032-97	IC	CXA1230AR
IC601	8-752-202-10	IC	CX22021-T1
IC602	8-752-003-22	IC	CX20032
IC603	8-759-202-67	IC	CX20117
IC604	8-752-351-53	IC	CX23054-T6
IC605	8-759-710-07	IC	NJM2234M
IC606	8-759-710-07	IC	NJM2234M
IC609	8-759-925-60	IC	BA401

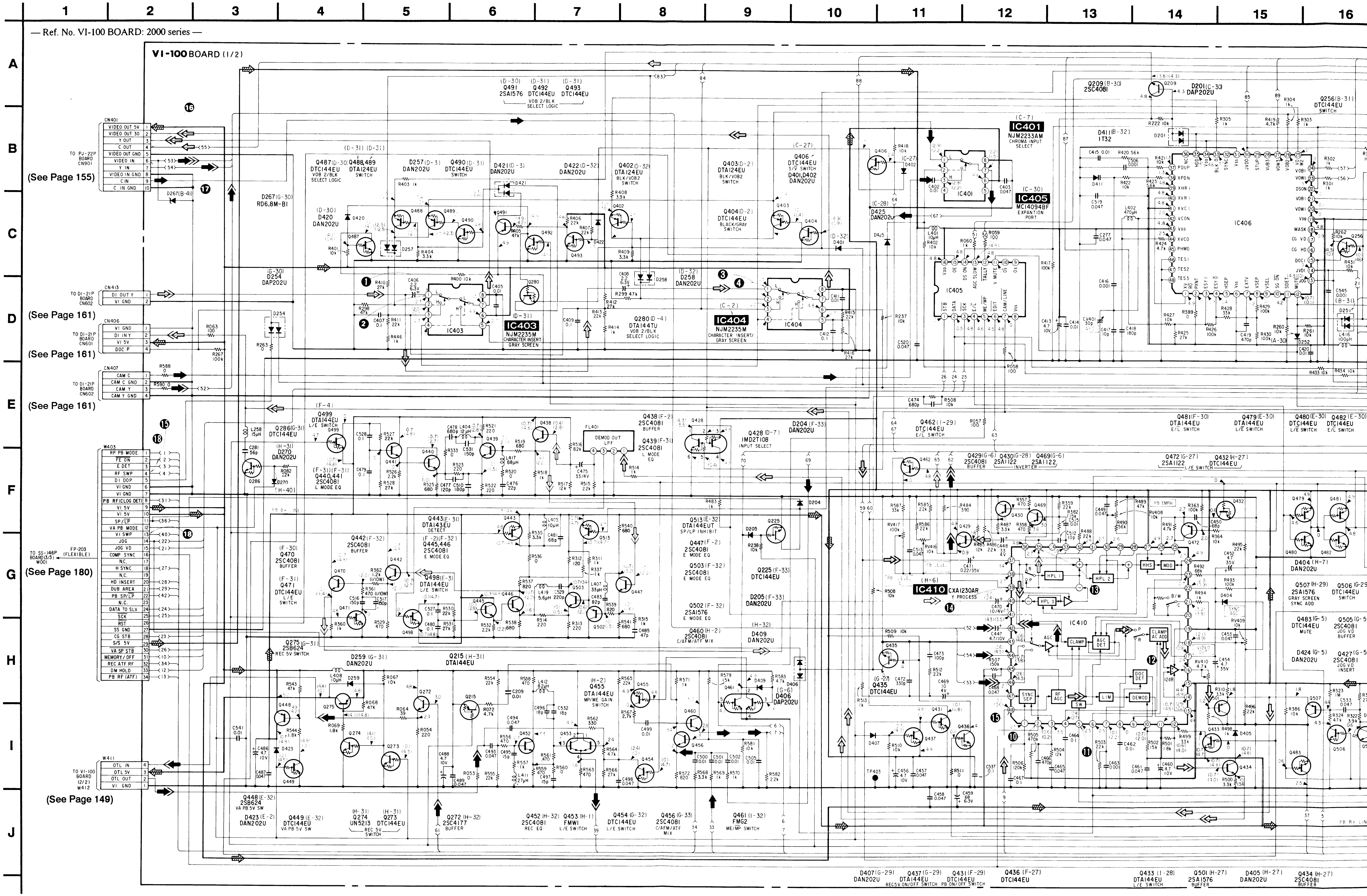
(TRANSISTOR)

Q201	8-729-905-23	TRANSISTOR	2SA1576-R
Q202	8-729-903-10	TRANSISTOR	FMW1
Q203	8-729-216-22	TRANSISTOR	2SA1162-G
Q204	8-729-903-10	TRANSISTOR	FMW1
Q205	8-729-905-23	TRANSISTOR	2SA1576-R
Q206	8-729-402-42	TRANSISTOR	UN5213
Q207	8-729-905-35	TRANSISTOR	2SC4081-R
Q208	8-729-905-23	TRANSISTOR	2SA1576-R
Q209	8-729-905-35	TRANSISTOR	2SC4081-R
Q210	8-729-403-35	TRANSISTOR	UN5113
Q211	8-729-905-96	TRANSISTOR	DTA114TU
Q212	8-729-905-96	TRANSISTOR	DTA114TU
Q213	8-729-402-42	TRANSISTOR	UN5213
Q214	8-729-905-09	TRANSISTOR	DTA144WU
Q215	8-729-403-35	TRANSISTOR	UN5113
Q216	8-729-402-42	TRANSISTOR	UN5213
Q217	8-729-403-35	TRANSISTOR	UN5113
Q220	8-729-905-23	TRANSISTOR	2SA1576-R
Q221	8-729-905-35	TRANSISTOR	2SC4081-R
Q225	8-729-402-42	TRANSISTOR	UN5213
Q226	8-729-905-09	TRANSISTOR	DTA144WU
Q228	8-729-402-42	TRANSISTOR	UN5213
Q251	8-729-905-35	TRANSISTOR	2SC4081-R
Q252	8-729-402-42	TRANSISTOR	UN5213
Q253	8-729-402-42	TRANSISTOR	UN5213
Q254	8-729-402-42	TRANSISTOR	UN5213
Q256	8-729-402-42	TRANSISTOR	UN5213
Q257	8-729-117-31	TRANSISTOR	2SC4177-L5
Q258	8-729-402-42	TRANSISTOR	UN5213
Q261	8-729-117-31	TRANSISTOR	2SC4177-L5
Q262	8-729-402-42	TRANSISTOR	UN5213
Q263	8-729-140-63	TRANSISTOR	2SA1611-M5M6
Q264	8-729-117-31	TRANSISTOR	2SC4177-L5
Q265	8-729-403-07	TRANSISTOR	XN1213
Q266	8-729-403-35	TRANSISTOR	UN5113
Q267	8-729-402-42	TRANSISTOR	UN5213
Q268	8-729-402-42	TRANSISTOR	UN5213
Q269	8-729-402-42	TRANSISTOR	UN5213
Q270	8-729-403-35	TRANSISTOR	UN5113
Q271	8-729-117-31	TRANSISTOR	2SC4177-L5
Q272	8-729-117-31	TRANSISTOR	2SC4177-L5
Q273	8-729-402-42	TRANSISTOR	UN5213
Q274	8-729-402-42	TRANSISTOR	UN5213
Q275	8-729-141-48	TRANSISTOR	2SB624-BV345
Q276	8-729-402-42	TRANSISTOR	UN5213
Q277	8-729-905-35	TRANSISTOR	2SC4081-R
Q278	8-729-905-23	TRANSISTOR	2SA1576-R
Q279	8-729-403-35	TRANSISTOR	UN5113
Q280	8-729-921-58	TRANSISTOR	DTA144TU
Q282	8-729-402-42	TRANSISTOR	UN5213
Q283	8-729-905-09	TRANSISTOR	DTA144WU
Q284	8-729-905-15	TRANSISTOR	DTC144WU
Q285	8-729-403-35	TRANSISTOR	UN5113
Q286	8-729-402-42	TRANSISTOR	UN5213
Q287	8-729-900-51	TRANSISTOR	DTA114TK

VI-100 (VIDEO SIGNAL PROCESS) SCHEMATIC DIAGRAM

• Refer to page 139 for Printed Wiring Board.

— Ref. No. VI-100 BOARD: 2000 series —



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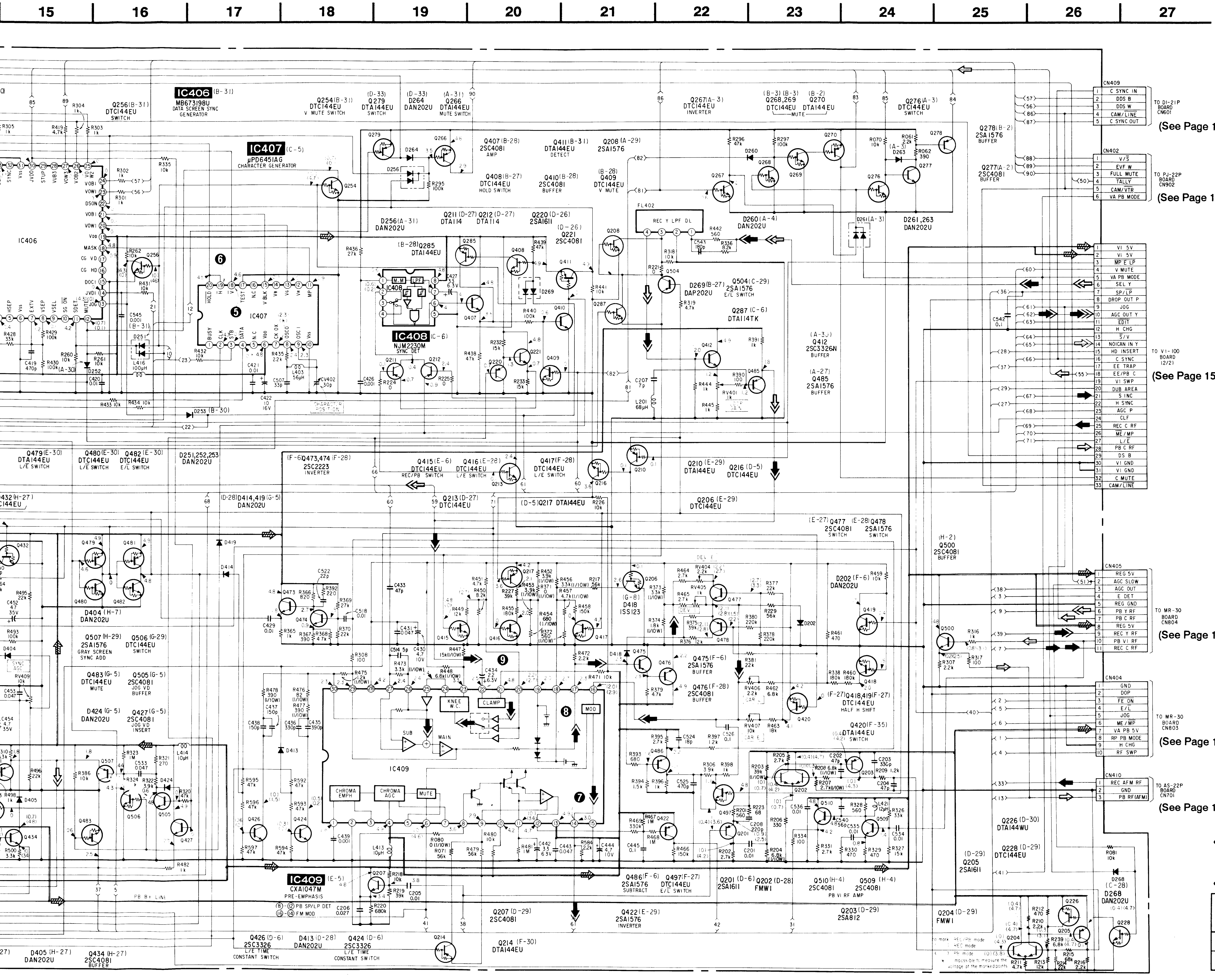
VI-100 BOARD (1/2)
CN401
VIDEO OUT 5V
VIDEO OUT 30
Y OUT
C OUT
VIDEO OUT GND
VIDEO IN
Y IN
VIDEO IN GND
C IN
C IN GND
TO PJ-22P BOARD CN901
(See Page 155)
CN413
DI OUT Y
VI GND
TO DI-21P BOARD CN602
(See Page 161)
CN406
VI GND
DI IN Y
VI 5V
DOC P
TO DI-21P BOARD CN601
(See Page 161)
CN407
CAM C
CAM C GND
CAM Y
CAM Y GND
TO DI-21P BOARD CN602
(See Page 161)
W403
RP PB MODE
FE ON
E DET
RF SWP
DI DOP
VI GND
VI GND
PB RFCLOG DET
VI 5V
VI 5V
SP/LP
VA PB MODE
VI SWP
JOG
JOG VD
COMP SYNC
N.C.
H SYNC
N.C.
HD INSERT
DUB AREA
PB SP/LP
N.C.
DATA TO SLV
SCK
RST
SS GND
CG STB
S/S 5V
VA SP STB
MEMORY/OFF
REC ATF RF
DM HOLD
PB RF (ATF)
TO SS-146P BOARD(3/3) W001
FP-203 (FLEXIBLE)
(See Page 180)
W411
OTL IN
OTL 5V
OTL OUT
VI GND
TO VI-100 BOARD (2/2) W412
(See Page 149)
IC401
NJM2233AM
CHROMA INPUT SELECT
IC405
MC14094BF
EXPANTION PORT
IC403
NJM2235M
CHARACTER INSERT GRAY SCREEN
IC404
NJM2235M
CHARACTER INSERT/ GRAY SCREEN
IC406
IC410
CXA1230AR
Y PROCESS
FL401
DEMOD OUT LPF
Q491 2SA1576
Q492 DTC144EU
Q493 DTC144EU
VOB 2/BLK SELECT LOGIC
Q487 DTC144EU VOB 2/BLK SELECT LOGIC
Q488,489 DTA124EU SWITCH
D257 DAN202U
Q490 DTC144EU SWITCH
D421 DAN202U
D422 DAN202U
Q402 DTA124EU BLK/VOB2 SWITCH
Q403 DTA124EU BLK/VOB2 SWITCH
Q404 DTC144EU BLACK/GRAY SWITCH
Q406 DTC144EU S/V SWITCH
D401,D402 DAN202U
D267 RD6.8M-B1
D420 DAN202U
D254 DAP202U
D258 DAN202U
Q280 DTA144TU VOB 2/BLK SELECT LOGIC
D425 DAN202U
Q209 2SC4081
D201 DAP202U
D411 1T32
Q256 DTC144EU SWITCH
Q286 DTC144EU
D270 DAN202U
Q499 DTA144EU L/E SWITCH
Q440,441 2SC4081 L MODE EQ
Q438 2SC4081 BUFFER
Q439 2SC4081 L MODE EQ
Q428 IMD2T108 INPUT SELECT
D204 DAN202U
Q462 DTC144EU E/L SWITCH
Q429 2SC4081 BUFFER
Q430 2SA1122
Q469 2SA1122 INVERTER
Q472 2SA1122
Q432 DTC144EU L/E SWITCH
Q481 DTA144EU E/L SWITCH
Q479 DTA144EU L/E SWITCH
Q480 DTC144EU L/E SWITCH
Q482 DTC144EU E/L SWITCH
Q443 DTA143EU DETECT
Q442 2SC4081 BUFFER
Q445,446 2SC4081 E MODE EQ
Q470 2SC4081 BUFFER
Q471 DTC144EU L/E SWITCH
Q498 DTA144EU L/E SWITCH
Q513 DTA144EUT SP/LP INHIBIT
Q447 2SC4081 E MODE EQ
Q503 2SC4081 E MODE EQ
Q502 2SA1576 E MODE EQ
Q225 DTC144EU
D205 DAN202U
Q460 2SC4081 C/AFM/ATF MIX
D409 DAN202U
D404 DAN202U
Q507 2SA1576 GRAY SCREEN SYNC ADD
Q506 DTC144EU SWITCH
Q483 DTC144EU MUTE
Q505 2SC4081 JOG VD BUFFER
D424 DAN202U
Q427 2SC4081 JOG VD INSERT
Q275 2SB624 REC 5V SWITCH
D259 DAN202U
Q215 DTA144EU
Q435 DTC144EU
Q455 DTA144EU MP/ME GAIN SWITCH
D406 DAP202U
Q448 2SB624 VA PB 5V SW
D423 DAN202U
Q449 DTC144EU VA PB 5V SW
Q274 UN5213
Q273 DTC144EU REC 5V SWITCH
Q272 2SC4177 BUFFER
Q452 2SC4081 REC EQ
Q453 FMW1 L/E SWITCH
Q454 DTC144EU L/E SWITCH
Q456 2SC4081 C/AFM/ATF MIX
Q461 FMG2 ME/MP SWITCH
D407 DAN202U
Q437 DTA144EU REC5V ON/OFF SWITCH
Q431 DTC144EU PB ON/OFF SWITCH
Q436 DTC144EU
Q433 DTA144EU L/E SWITCH
Q501 2SA1576 BUFFER
D405 DAN202U
Q434 2SC4081 BUFFER
HPL 1
HPL 2
HPL 3
HHS
MOD
CLAMP
AGC
AGC DET
CLAMP AC ADD
DOC DET
SYNC SEP
RF AGC
SW
LIM
DEMOD
TP403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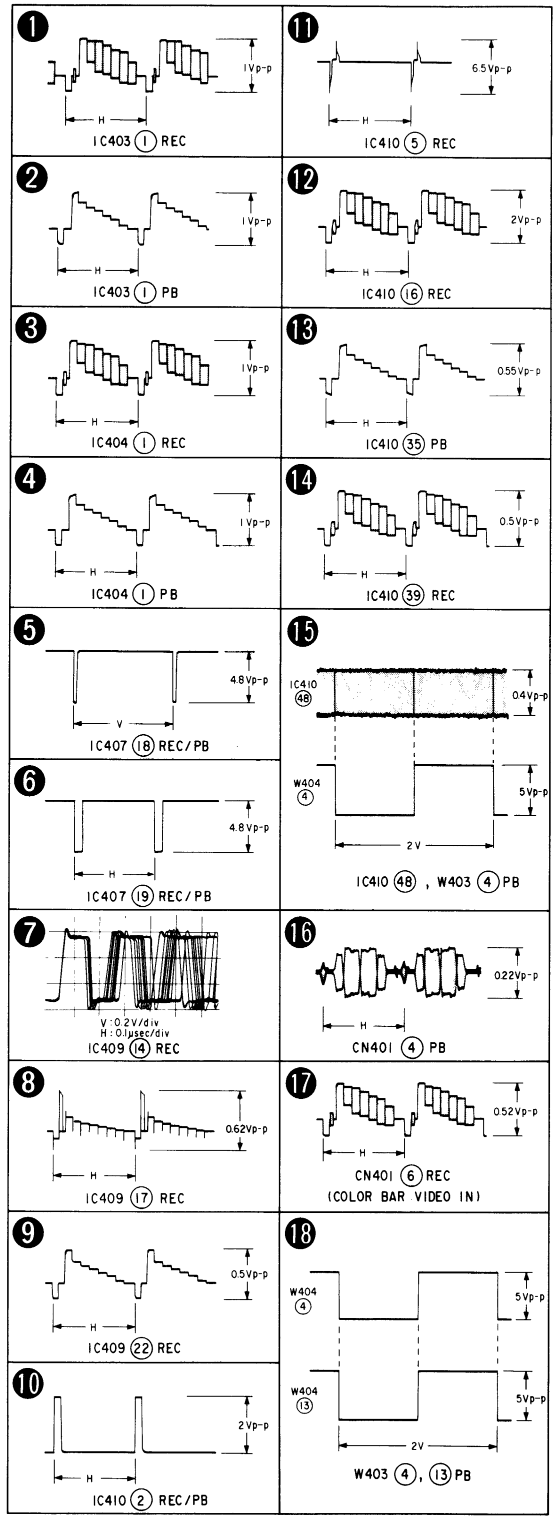
IC406 MB673198U DATA SCREEN SYNC GENERATOR
IC407 μPD6451AG CHARACTER GENERATOR
IC408 NJM2230M SYNC DET
IC409 CXA1047M PRE-EMPHASIS
⑧-⑫ PB SP/LP DET
⑬-⑭ F.M MOD
FL402 REC Y LPF DL
CN409
TO DI-21P BOARD CN601
(See Page 161)
CN402
TO PJ-22P BOARD CN902
(See Page 155)
TO VI-100 BOARD (2/2)
(See Page 152)
CN405
TO MR-30 BOARD CN804
(See Page 134)
CN404
TO MR-30 BOARD CN803
(See Page 134)
CN410
TO AS-22P BOARD CN701
(See Page 196)

VI-100 BOARD (1/2)

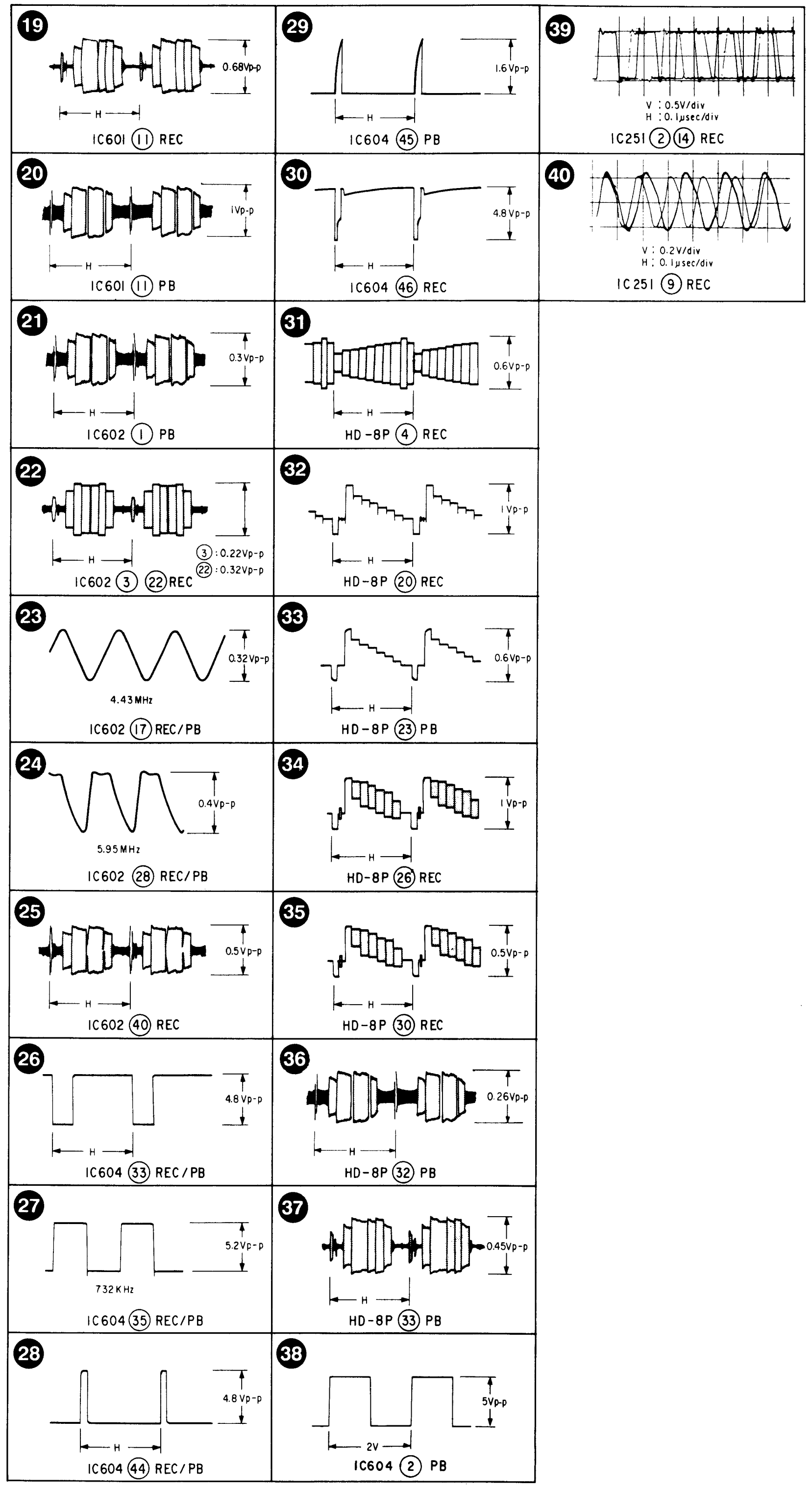


- All resistors are in ohms, 1/16W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

VI-100 BOARD(2/2)



- All resistors are in ohms, 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .

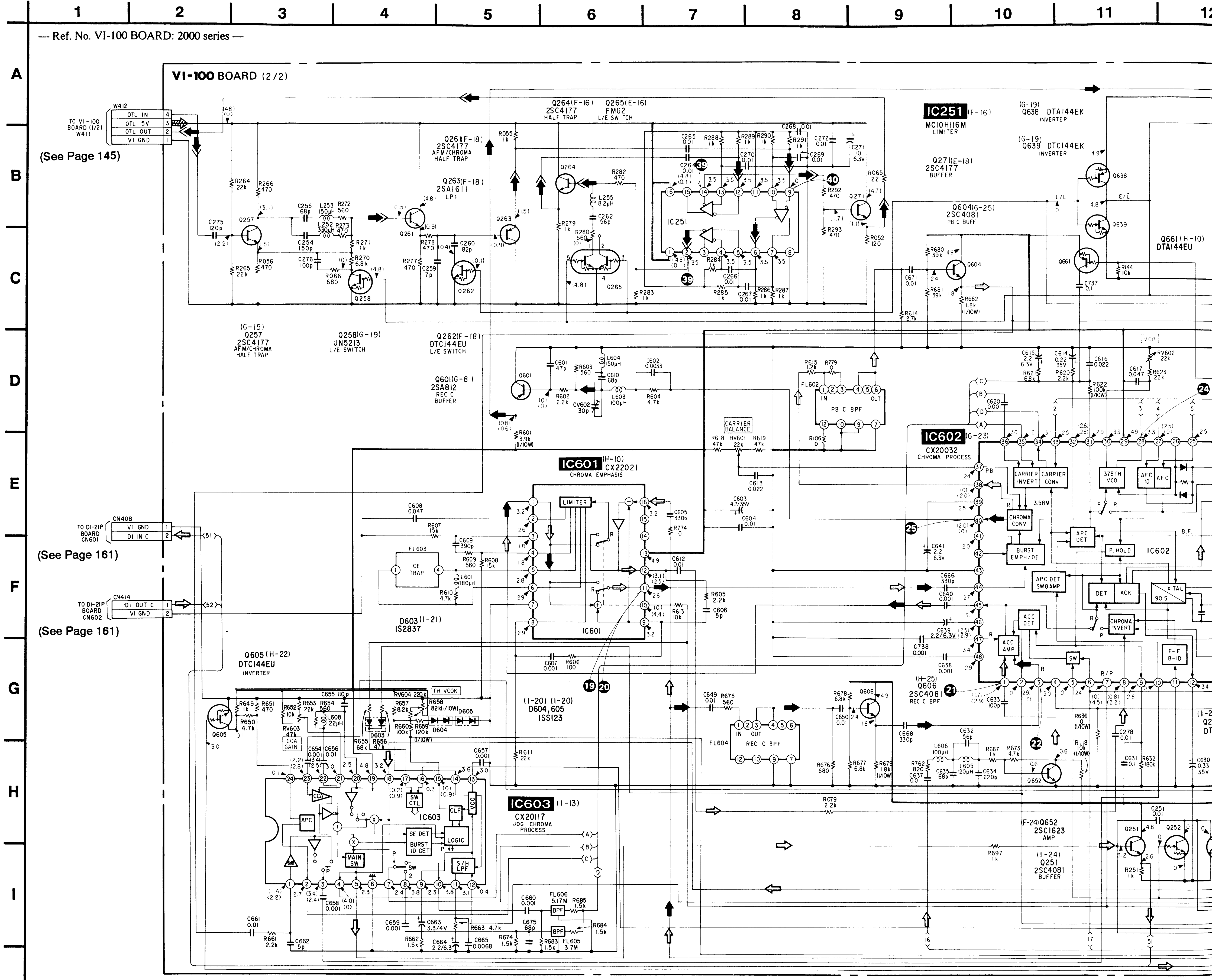
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	⇨	➡	➡》	
PB	➡	⇨	⇨》	

VI-100 (VIDEO SIGNAL PROCESS) SCHEMATIC DIAGRAM

- Refer to page 139 for Printed Wiring Board.
- HD-8P Board is replaced as a block.

— Ref. No. VI-100 BOARD: 2000 series —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VI-100 BOARD (2/2)
TO VI-100 BOARD (1/2) W411
W412
OTL IN
OTL 5V
OTL OUT
VI GND
(See Page 145)
TO DI-21P BOARD CN601
CN408
VI GND
DI IN C
(See Page 161)
TO DI-21P BOARD CN602
CN414
DI OUT C
VI GND
(See Page 161)
Q264(F-16) 2SC4177 HALF TRAP
Q265(E-16) FMG2 L/E SWITCH
Q261(F-18) 2SC4177 AFM/CHROMA HALF TRAP
Q263(F-18) 2SA1611 LPF
(G-15) Q257 2SC4177 AFM/CHROMA HALF TRAP
Q258(G-19) UN5213 L/E SWITCH
Q262(F-18) DTC144EU L/E SWITCH
Q601(G-8) 2SA812 REC C BUFFER
IC251 (F-16) MC10H116M LIMITER
(G-19) Q638 DTA144EK INVERTER
(G-19) Q639 DTC144EK INVERTER
Q271(E-18) 2SC4177 BUFFER
Q604(G-25) 2SC4081 PB C BUFF
Q661(H-10) DTA144EU
IC601 (H-10) CX22021 CHROMA EMPHASIS
LIMITER
CE TRAP
FL603
D603(I-21) 1S2837
FL602 PB C BPF
CARRIER BALANCE
IC602 (G-23) CX20032 CHROMA PROCESS
CARRIER INVERT
CARRIER CONV
3781H VCO
AFC ID
AFC
3.58M
CHROMA CONV
BURST EMPH/DE
APC DET
P. HOLD
IC602
APC DET SWBAMP
DET
ACK
X TAL 90 S
ACC DET
ACC AMP
CHROMA INVERT
SW
F-F B-ID
Q605(H-22) DTC144EU INVERTER
RV604 220k
TH VCOK
GCA GAIN
(I-20) (I-20) D604,605 1SS123
IC603 (I-13) CX20117 JOG CHROMA PROCESS
GCA
APC
SW CTL
CLF
VCO
SE DET
BURST ID DET
LOGIC
MAIN SW
S/H LPF
FL604 REC C BPF
(H-25) Q606 2SC4081 REC C BPF
(F-24) Q652 2SC1623 AMP
(I-24) Q251 2SC4081 BUFFER
FL606 5.17M BPF
FL605 3.7M BPF
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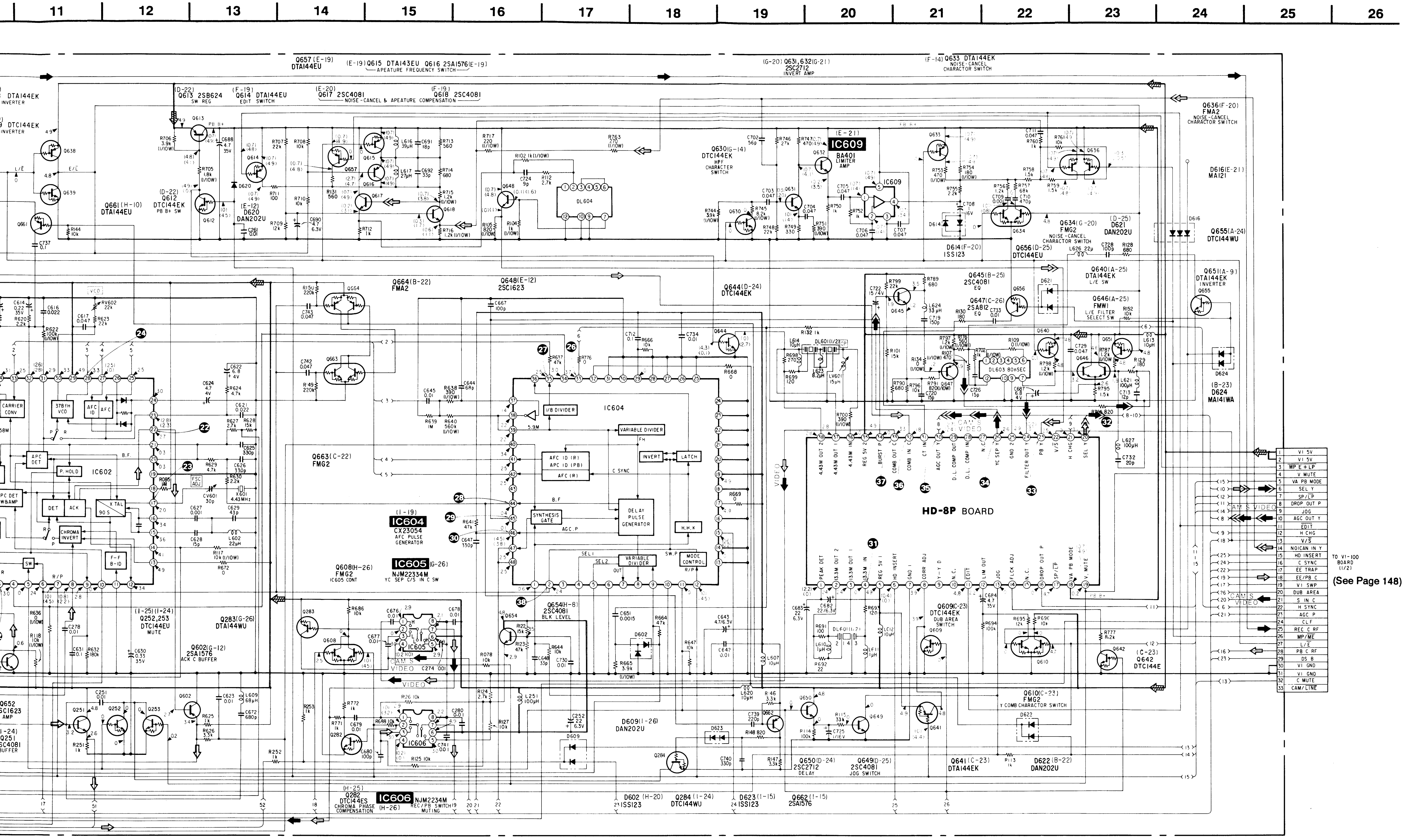
VIDEO VIDEO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Q657 (E-19) DTA144EU
(E-19) Q615 DTA143EU Q616 2SA1576 (E-19) APEATURE FREQUENCY SWITCH
(G-20) Q631,632 (G-21) 2SC2712 INVERT AMP
(F-14) Q633 DTA144EK NOISE-CANCEL CHARACTOR SWITCH
DTA144EK INVERTER
DTC144EK INVERTER
(D-22) Q613 2SB624 SW REG
(F-19) Q614 DTA144EU EDIT SWITCH
(E-20) Q617 2SC4081 NOISE-CANCEL & APEATURE COMPENSATION
(F-19) Q618 2SC4081
Q636 (F-20) FMA2 NOISE-CANCEL CHARACTOR SWITCH
Q661 (H-10) DTA144EU
(D-22) Q612 DTC144EK PB B+ SW
(E-12) D620 DAN202U
DL604
Q630 (G-14) DTC144EK HPF CHARACTER SWITCH
(E-21) IC609 BA401 LIMITER AMP
IC609
D616 (E-21) MA121
Q634 (G-20) FMG2 NOISE-CANCEL CHARACTOR SWITCH
(D-25) D621 DAN202U
Q655 (A-24) DTC144WU
D614 (F-20) 1SS123
Q656 (D-25) DTC144EU
Q640 (A-25) DTA144EK L/E SW
Q651 (A-9) DTA144EK INVERTER
Q664 (B-22) FMA2
Q648 (E-12) 2SC1623
Q644 (D-24) DTC144EK
Q645 (B-25) 2SC4081 EQ
Q647 (C-26) 2SA812 EQ
Q646 (A-25) FMW1 L/E FILTER SELECT SW
DL601 (1/2)
DL603 80nSEC
D624
(B-23) D624 MA141WA
VCO
378fH VCO
AFC ID
AFC
CARRIER CONV
APC DET
P. HOLD
IC602
DET
ACK
X TAL 90 S
CHROMA INVERT
F-F B-ID
SW
FSC ADJ
X601 4.43MHz
1/8 DIVIDER
IC604
VARIABLE DIVIDER
FH
INVERT
LATCH
AFC ID (R) APC ID (PB)
AFC (R)
C SYNC
SYNTHESIS GATE
AGC.P
DELAY PULSE GENERATOR
H.H.K
SEL 1
SEL 2
VARIABLE DIVIDER
MODE CONTROL
R/P
SW.P
Q663 (C-22) FMG2
(1-19) IC604 CX23054 AFC PULSE GENERATOR
IC605 (G-26) NJM22334M YC SEP C/S IN C SW
Q608 (H-26) FMG2 IC605 CONT
(1-25)(1-24) Q252,253 DTC144EU MUTE
Q283 (G-26) DTA144WU
Q602 (G-12) 2SA1576 ACK C BUFFER
Q654 (H-8) 2SC4081 BLK LEVEL
D602
Q609 (C-23) DTC144EK DUB AREA SWITCH
Q610
Q642 (C-23) DTC144E
Q610 (C-23) FMG2 Y COMB CHARACTOR SWITCH
D622
D609 (1-26) DAN202U
D623
Q650 (D-24) 2SC2712 DELAY
Q649 (D-25) 2SC4081 JOG SWITCH
Q641 (C-23) DTA144EK
D622 (B-22) DAN202U
Q652 2SC1623 AMP
(1-24) Q251 2SC4081 BUFFER
(H-25) Q282 DTC144ES CHROMA PHASE COMPENSATION
IC606 NJM2234M (H-26) REC/PB SWITCH MUTING
IC606
D602 (H-20) 1SS123
Q284 (1-24) DTC144WU
D623 (1-15) 1SS123
Q662 (1-15) 2SA1576
HD-8P BOARD
4.43M OUT
4.43M IN
REG 5V
BURST P
COMB OUT C
COMB IN C
CT IN
AGC OUT Y
D.L COMP OUT
D.L COMP IN
YC SEP Y
GND 2
FILTER OUT Y
PB Y
V/S
H CHG
SEL Y
PEAK DET
13.3M OUT 2
13.3M OUT 1
13.3M IN
REG 5V 1
HD INSERT
GND 1
CORR ADJ
Y-Y O
N.C.
EDIT
LIM OUT
JOG
FLCK ADJ
N.C.
DROP OUT P
SP/LP
VA PB MODE
V. MUTE
CAM'S VIDEO
VIDEO
1 VI 5V
2 VI 5V
3 MP E+LP
4 V MUTE
5 VA PB MODE
6 SEL Y
7 SP/LP
8 DROP OUT P
9 JOG
10 AGC OUT Y
11 EDIT
12 H CHG
13 V/S
14 NOICAN IN Y
15 HD INSERT
16 C SYNC
17 EE TRAP
18 EE/PB C
19 VI SWP
20 DUB AREA
21 S IN C
22 H SYNC
23 AGC P
24 CLF
25 REC C RF
26 MP/ME
27 L/E
28 PB C RF
29 DS B
30 VI GND
31 VI GND
32 C MUTE
33 CAM/LINE
TO VI-100 BOARD (1/2)
(See Page 148)

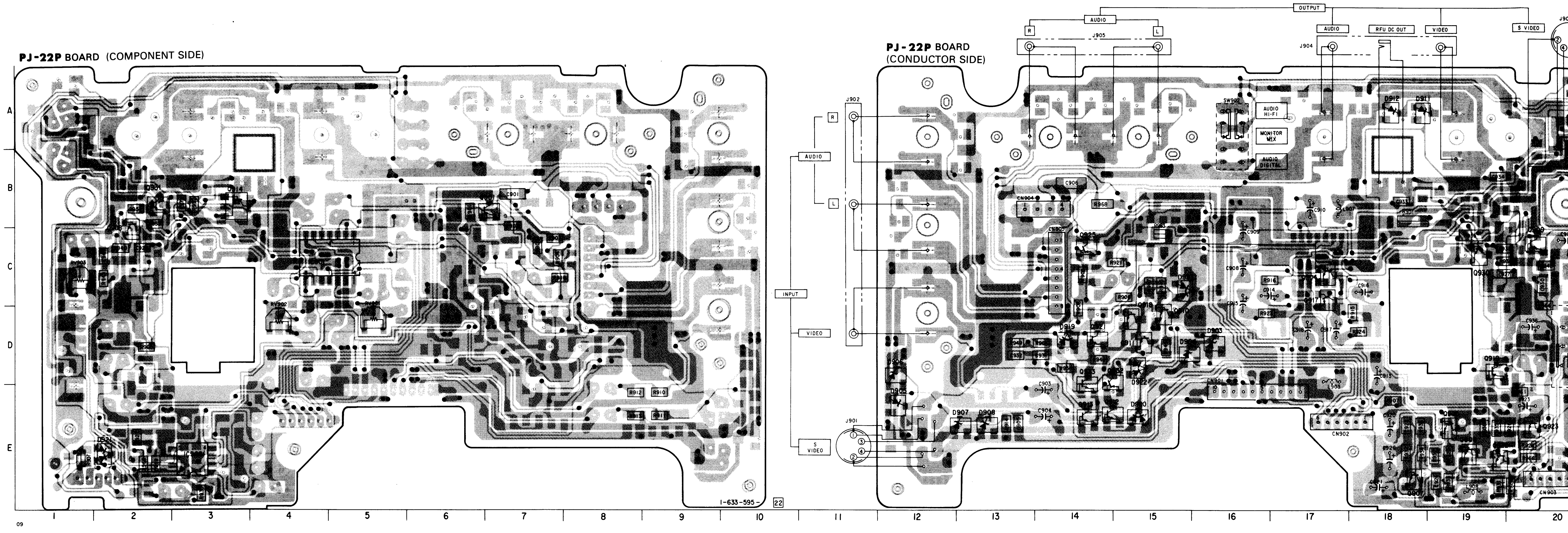
— 151 —

VIDEO VIDEO

— 152 —

PJ-22P (VIDEO AMP, INPUT/OUTPUT CONNECTOR) PRINTED WIRING BOARD

— Ref. No. PJ-22P BOARD: 3000 series —


PJ-22P BOARD (COMPONENT SIDE)
PJ-22P BOARD (CONDUCTOR SIDE)
OUTPUT
AUDIO
R
L
J905
J904
AUDIO
RFU DC OUT
VIDEO
S VIDEO
J902
AUDIO
INPUT
VIDEO
S VIDEO
J901
AUDIO HI-FI
MONITOR MIX
AUDIO DIGITAL
SW902
CN904
CN905
CN901
CN902
CN903
1-633-595-
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〈 DIODE 〉

D903	8-719-106-43	DIODE	RD9.1M-B1
D904	8-719-106-43	DIODE	RD9.1M-B1
D905	8-719-106-43	DIODE	RD9.1M-B1
D906	8-719-106-43	DIODE	RD9.1M-B1
D907	8-719-106-43	DIODE	RD9.1M-B1
D908	8-719-106-43	DIODE	RD9.1M-B1
D909	8-719-106-43	DIODE	RD9.1M-B1
D910	8-719-106-43	DIODE	RD9.1M-B1
D911	8-719-106-43	DIODE	RD9.1M-B1
D912	8-719-106-43	DIODE	RD9.1M-B1
D919	8-719-400-18	DIODE	MA152WK
D920	8-719-400-18	DIODE	MA152WK
D921	8-719-400-18	DIODE	MA152WK
D922	8-719-400-18	DIODE	MA152WK
D923	8-719-400-18	DIODE	MA152WK
D924	8-719-400-18	DIODE	MA152WK

〈 IC 〉

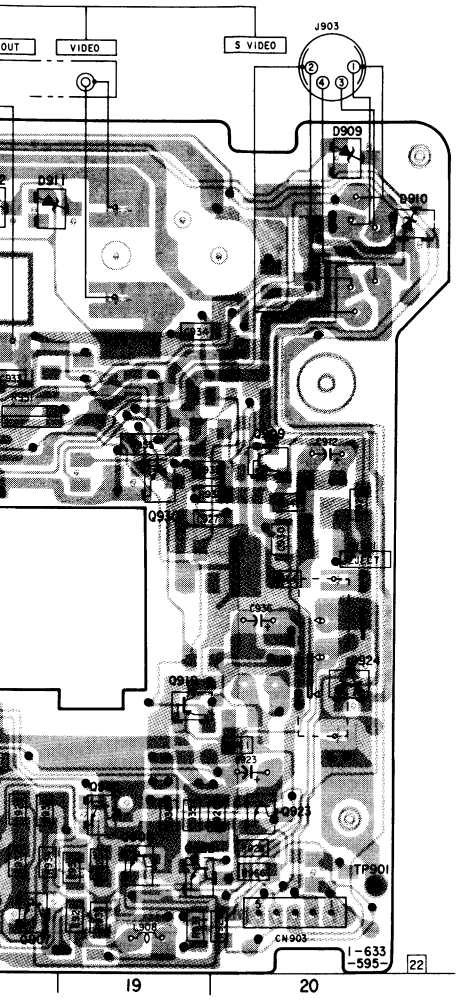
IC901	8-752-009-51	IC	CX20095A
IC902	8-759-710-86	IC	NJM2233BM

〈 TRANSISTOR 〉

Q901	8-729-216-22	TRANSISTOR	2SA1162-G
Q904	8-729-901-01	TRANSISTOR	DTC144EK
Q905	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q906	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q907	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q908	8-729-230-49	TRANSISTOR	2SC2712-YG
Q909	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q910	8-729-141-48	TRANSISTOR	2SB624-BV345
Q911	8-729-901-01	TRANSISTOR	DTC144EK
Q912	8-729-901-01	TRANSISTOR	DTC144EK
Q913	8-729-901-01	TRANSISTOR	DTC144EK
Q914	8-729-101-07	TRANSISTOR	2SB798-DL
Q917	8-729-901-01	TRANSISTOR	DTC144EK
Q918	8-729-901-01	TRANSISTOR	DTC144EK
Q919	8-729-216-22	TRANSISTOR	2SA1162-G
Q921	8-729-901-01	TRANSISTOR	DTC144EK
Q922	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q923	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q925	8-729-216-22	TRANSISTOR	2SA1162-G
Q930	8-729-216-22	TRANSISTOR	2SA1162-G
Q931	8-729-216-22	TRANSISTOR	2SA1162-G
Q932	8-729-901-06	TRANSISTOR	DTA144EK
Q933	8-729-901-01	TRANSISTOR	DTC144EK

PJ-22P (VIDEO AMP, INPUT/OUTPUT CONNECTOR) SCHEMATIC DIAGRAM

— Ref. No. PJ-22P BOARD: 3000 series —


S VIDEO
VIDEO
J903
D909
D910
D911
TP901
CN903
1-633-595-
22
19
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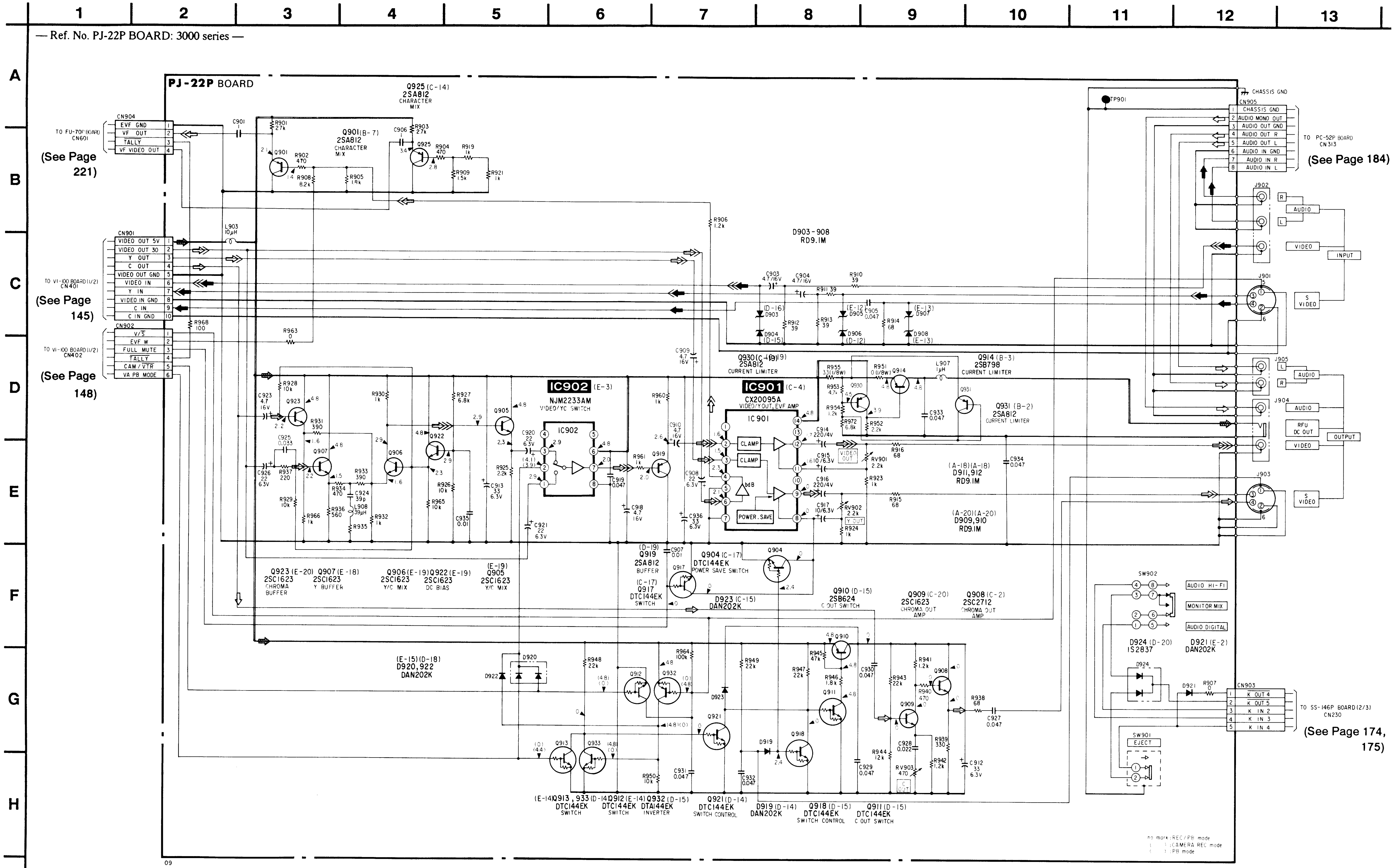
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I
J
PJ-22P BOARD
CN904
EVF GND
VF OUT
TALLY
VF VIDEO OUT
TO FU-70P (KIN8) CN601
(See Page 221)
CN901
VIDEO OUT 5V
VIDEO OUT 3D
Y OUT
C OUT
VIDEO OUT GND
VIDEO IN
Y IN
VIDEO IN GND
C IN
C IN GND
TO VI-100 BOARD (1/2) CN401
(See Page 145)
CN902
V/S
EVF W
FULL MUTE
TALLY
CAM/VTR
VA PB MODE
TO VI-100 BOARD (1/2) CN402
(See Page 148)
Q925 (C-14) 2SA812 CHARACTER MIX
Q901 (B-7) 2SA812 CHARACTER MIX
D903-908 RD9.1M
IC902 (E-3) NJM2233AM VIDEO/YC SWITCH
IC901 (C-4) CX20095A VIDEO/Y OUT, EVF AMP
CLAMP
POWER SAVE
Q930 (C-19) 2SA812 CURRENT LIMITER
Q914 (B-3) 2SB798 CURRENT LIMITER
Q931 (B-2) 2SA812 CURRENT LIMITER
(A-18)(A-18) D911,912 RD9.1M
(A-20)(A-20) D909,910 RD9.1M
Q923 (E-20) 2SC1623 CHROMA BUFFER
Q907 (E-18) 2SC1623 Y BUFFER
Q906 (E-19) 2SC1623 Y/C MIX
Q922 (E-19) 2SC1623 DC BIAS
(E-19) Q905 2SC1623 Y/C MIX
(D-19) Q919 2SA812 BUFFER
(C-17) Q917 DTC144EK SWITCH
Q904 (C-17) DTC144EK POWER SAVE SWITCH
D923 (C-15) DAN202K
Q910 (D-15) 2SB624 C OUT SWITCH
Q909 (C-20) 2SC1623 CHROMA OUT AMP
Q908 (C-2) 2SC2712 CHROMA OUT AMP
(E-15)(D-18) D920,922 DAN202K
(E-14) Q913, 933 (D-14) DTC144EK SWITCH
Q912 (E-14) DTC144EK SWITCH
Q932 (D-15) DTA144EK INVERTER
Q921 (D-14) DTC144EK SWITCH CONTROL
D919 (D-14) DAN202K
Q918 (D-15) DTC144EK SWITCH CONTROL
Q911 (D-15) DTC144EK C OUT SWITCH
TP901
CHASSIS GND
CN905
CHASSIS GND
AUDIO MONO OUT
AUDIO OUT GND
AUDIO OUT R
AUDIO OUT L
AUDIO IN GND
AUDIO IN R
AUDIO IN L
TO PC-52P BOARD CN313
(See Page 184)
J902
AUDIO
VIDEO
INPUT
J901
S VIDEO
J905
AUDIO
J904
AUDIO
RFU DC OUT
VIDEO
OUTPUT
J903
S VIDEO
SW902
AUDIO HI-FI
MONITOR MIX
AUDIO DIGITAL
D924 (D-20) 1S2837
D921 (E-2) DAN202K
CN903
K OUT 4
K OUT 5
K IN 2
K IN 3
K IN 4
TO SS-146P BOARD (2/3) CN230
(See Page 174, 175)
SW901 EJECT
no mark : REC/PB mode
( ) : CAMERA REC mode
( ) : PB mode
09

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

DI-21P (Y/C DIGITAL PROCESS) PRINTED WIRING BOARD

— Ref. No. DI-21P BOARD: 3000 series —

(DIODE)

D701	8-713-300-88	DIODE	1T33C-01
D702	8-719-949-46	DIODE	1T32
D703	8-719-988-37	DIODE	HVU350
D704	8-719-400-18	DIODE	MA152WK
D707	8-719-940-45	DIODE	DWA010
D708	8-719-940-45	DIODE	DWA010
D712	8-719-400-18	DIODE	MA152WK
D713	8-719-400-18	DIODE	MA152WK

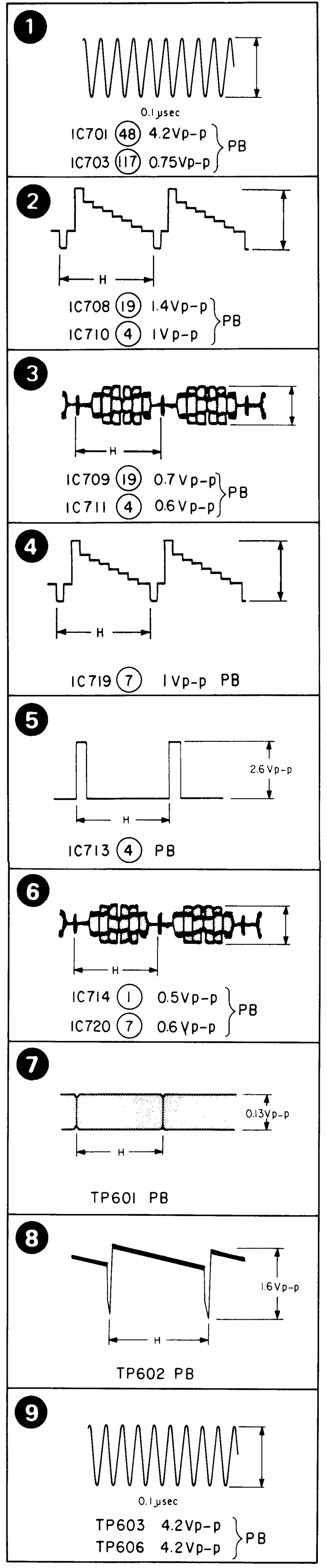
(IC)

IC701	8-759-987-17	IC	CXD1226Q
IC702	8-759-987-18	IC	CXD1227Q
IC703	8-759-987-19	IC	CXD1228Q
IC704	8-759-987-20	IC	CXD1229Q
IC705	8-752-340-75	IC	CXK1206AM
IC706	8-752-340-75	IC	CXK1206AM
IC707	8-752-340-75	IC	CXK1206AM
IC708	8-752-334-55	IC	CXD1175AM
IC709	8-752-334-55	IC	CXD1175AM
IC710	8-752-032-96	IC	CXA1106M
IC711	8-752-032-96	IC	CXA1106M
IC712	8-759-926-23	IC	SN74HC163ANS
IC713	8-759-011-65	IC	MC74HC4053F
IC714	8-759-011-65	IC	MC74HC4053F
IC715	8-759-239-34	IC	TC74HC4538AF
IC716	8-759-206-28	IC	MC74HC123AF
IC717	8-759-916-25	IC	SN74HC32AN
IC718	8-759-925-76	IC	SN74HC08ANS
IC719	8-759-710-29	IC	NJM2235M
IC720	8-759-710-86	IC	NJM2233BM

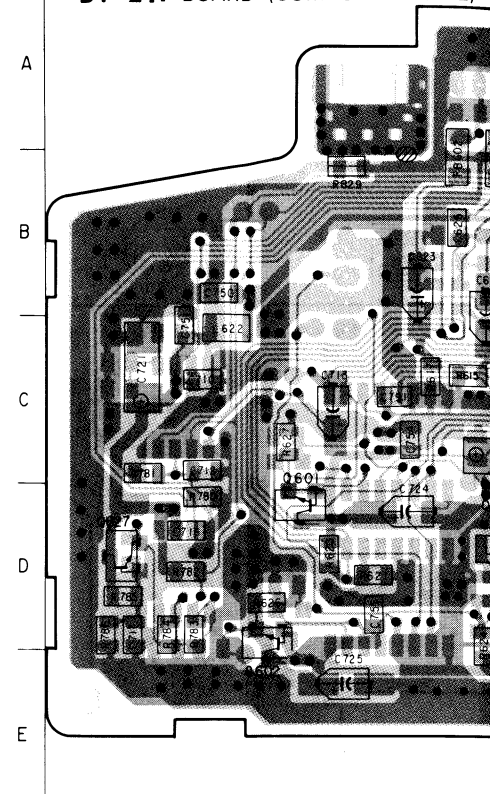
(TRANSISTOR)

Q601	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q602	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q603	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q604	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q605	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q606	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q607	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q608	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q609	8-729-216-22	TRANSISTOR	2SA1162-G
Q610	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q611	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q612	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q613	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q614	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q615	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q616	8-729-109-44	TRANSISTOR	2SK94-X4
Q617	8-729-901-01	TRANSISTOR	DTC144EK
Q618	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q619	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q620	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q621	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q622	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q623	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q624	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q625	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q626	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q627	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q628	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q629	8-729-901-01	TRANSISTOR	DTC144EK
Q630	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q631	8-729-102-08	TRANSISTOR	2SC2223-F14
Q632	8-729-102-08	TRANSISTOR	2SC2223-F14
Q634	8-729-904-07	TRANSISTOR	FMG2
Q635	8-729-901-01	TRANSISTOR	DTC144EK
Q636	8-729-216-22	TRANSISTOR	2SA1162-G
Q637	8-729-122-63	TRANSISTOR	2SA1226-E4
Q638	8-729-122-63	TRANSISTOR	2SA1226-E4

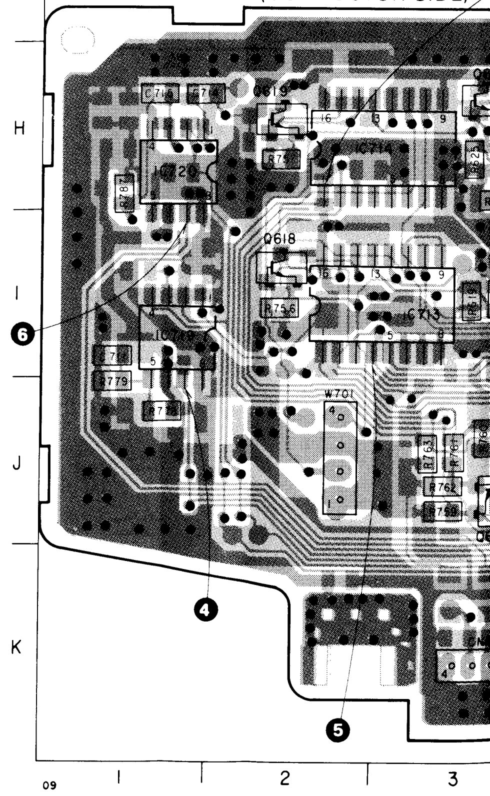
DI-21P BOARD



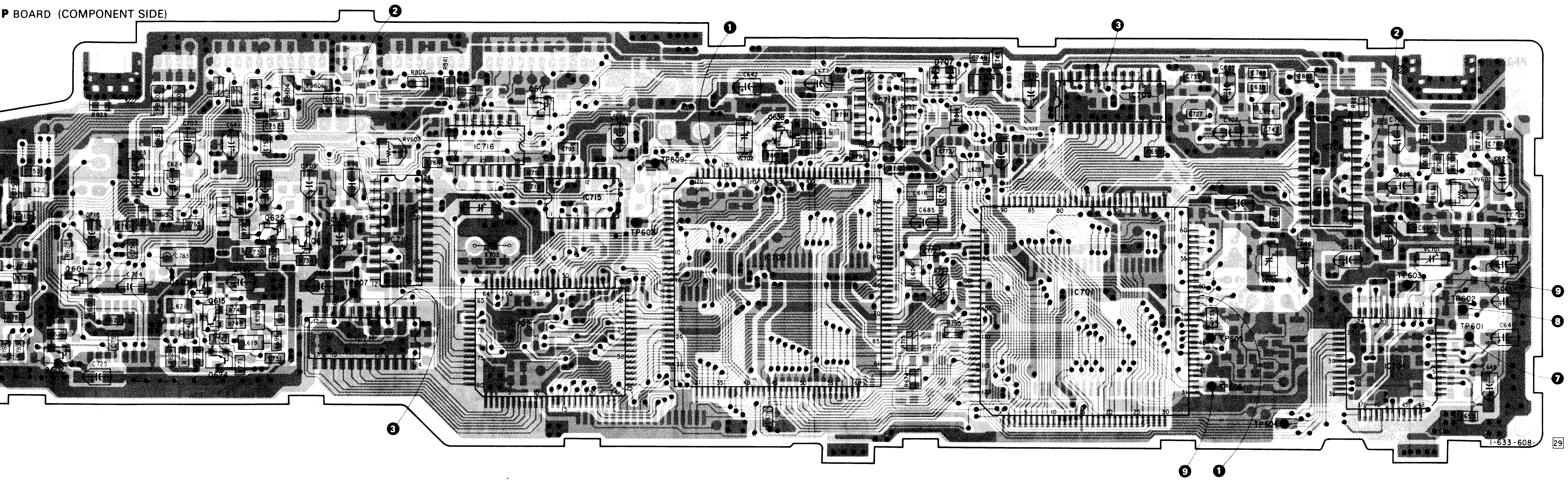
DI-21P BOARD (COMPONENT SIDE)



DI-21P BOARD (CONDUCTOR SIDE)



P BOARD (COMPONENT SIDE)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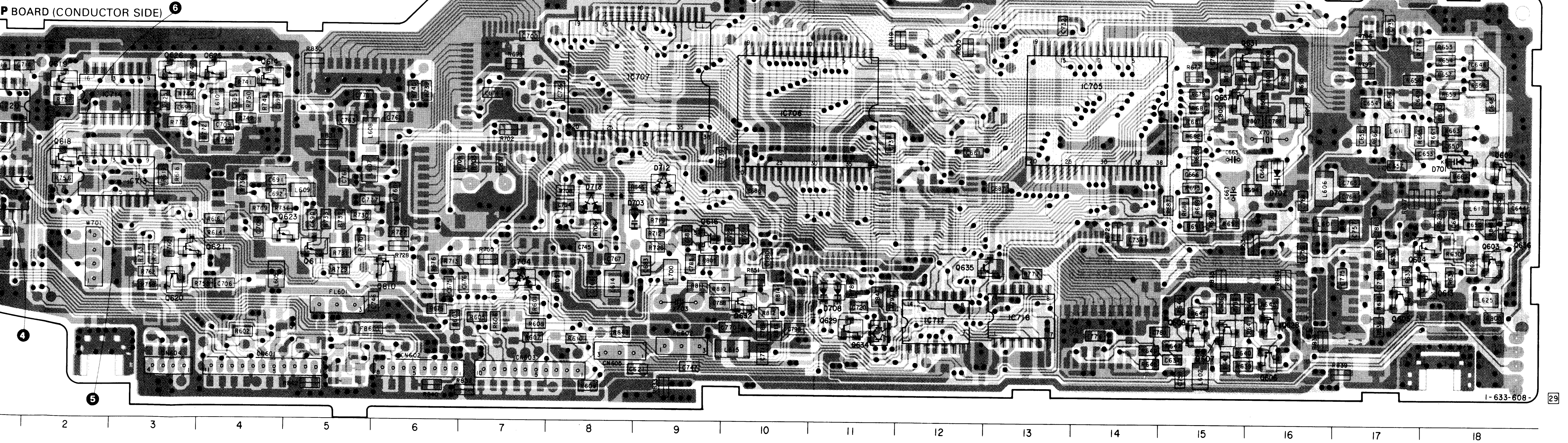
IC701
IC703
IC704
IC709
IC710
IC711
IC715
IC716
IC720
TP601
TP602
TP603
TP604
TP605
TP606
TP607
TP608
TP609
X702
X701
RV602
RV603
Q601
Q615
Q617
Q622
Q624
Q636
D707
1-633-608-
29

P BOARD (CONDUCTOR SIDE)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IC705
IC706
IC707
IC713
IC717
IC718
CN601
CN602
CN603
CN604
CN605
FL601
D701
D703
D708
D712
D716
Q603
Q604
Q610
Q611
Q618
Q619
Q620
Q621
Q623
Q625
Q626
Q629
Q632
Q634
Q635
Q657
W701
X701
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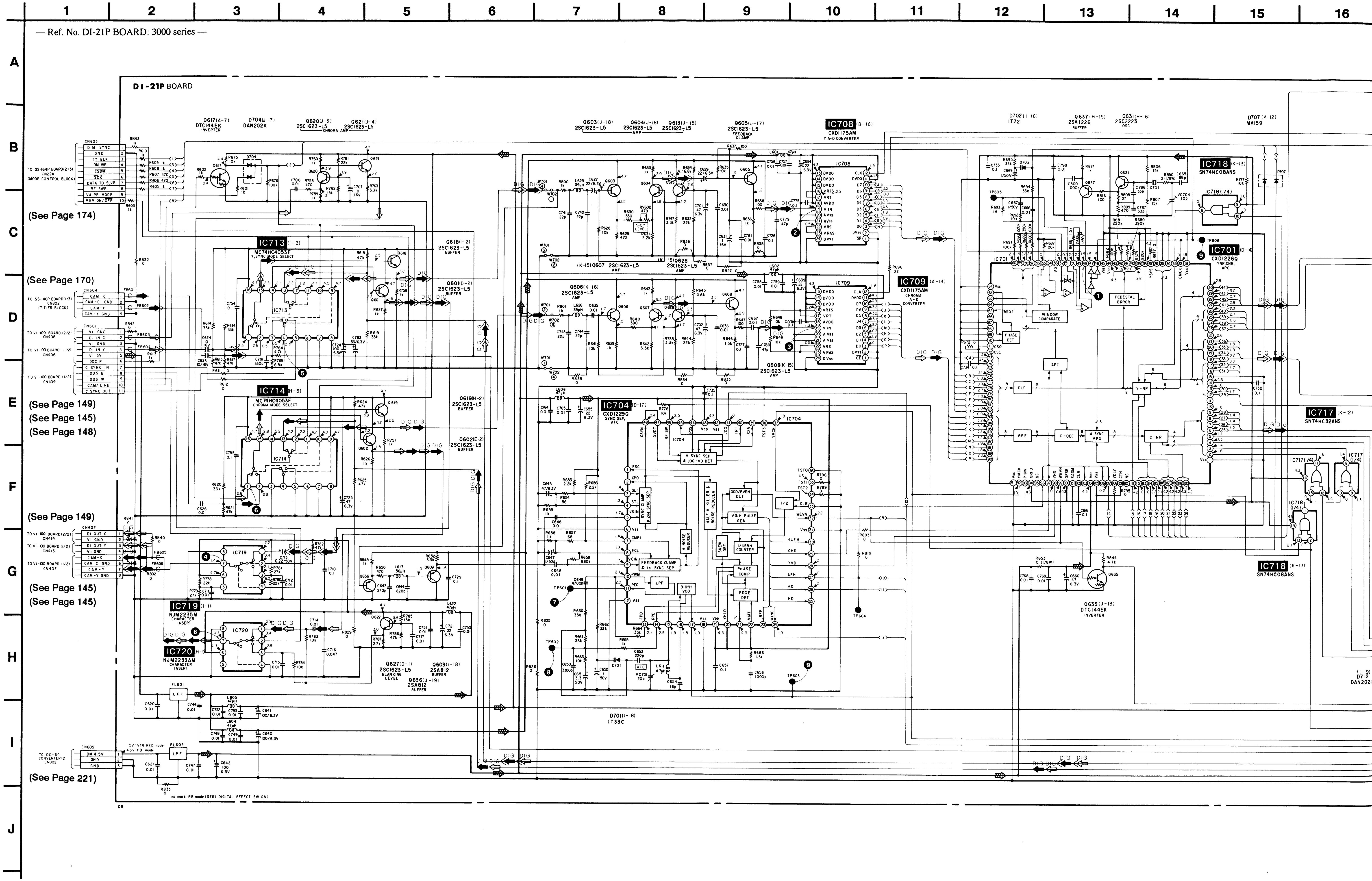
DI-21P (Y/C DIGITAL PROCESS) SCHEMATIC DIAGRAM

— Ref. No. DI-21P BOARD: 3000 series —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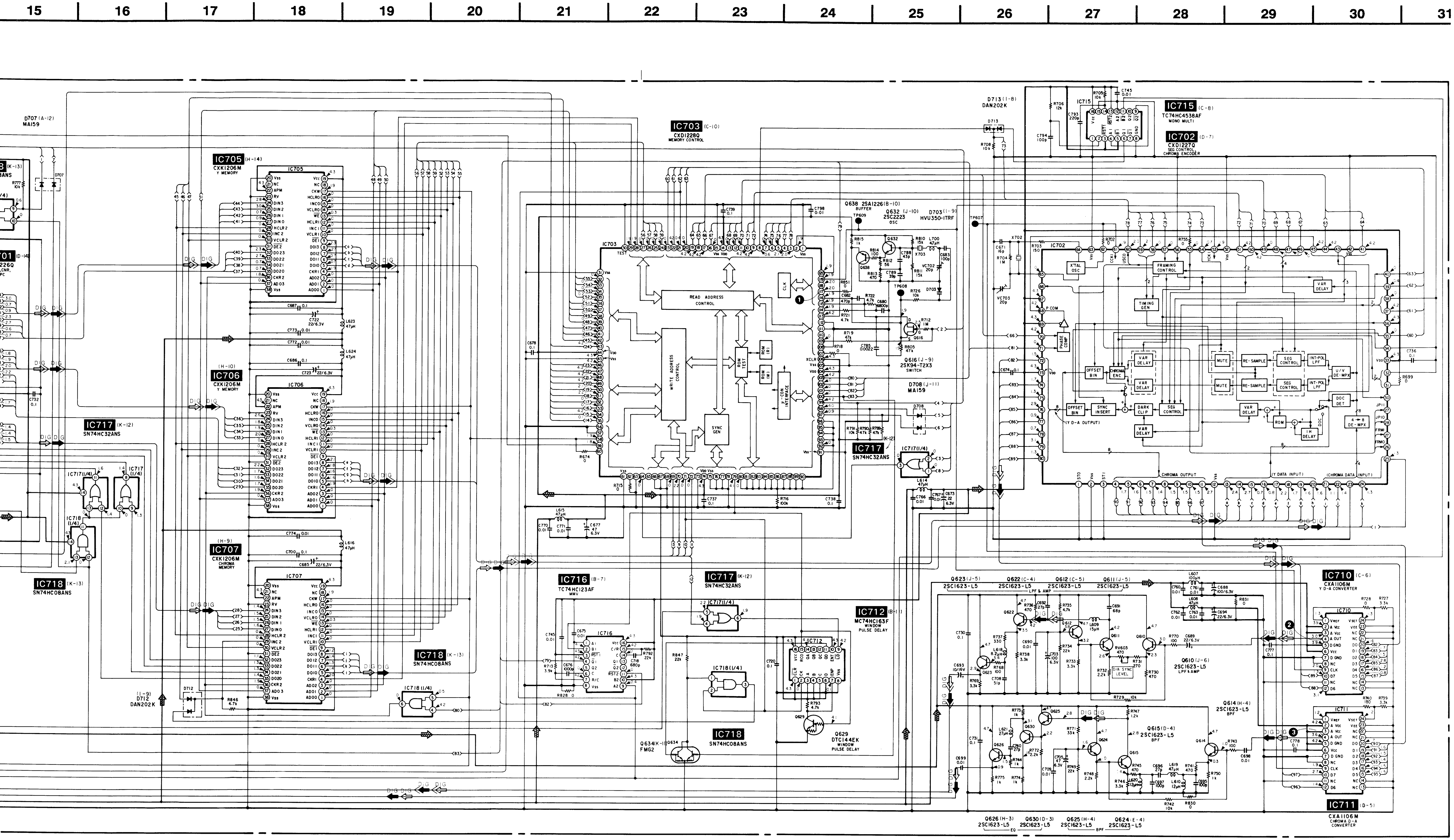
DI-21P BOARD
(See Page 174)
(See Page 170)
(See Page 149)
(See Page 145)
(See Page 148)
(See Page 149)
(See Page 145)
(See Page 145)
(See Page 221)
CN603
CN601
CN602
CN604
CN605
IC708 CXD1175AM Y A-D CONVERTER
IC709 CXD1175AM CHROMA A-D CONVERTER
IC713 MC74HC4053F Y, SYNC MODE SELECT
IC714 MC74HC4053F CHROMA MODE SELECT
IC704 CXD1229Q SYNC SEP, AFC
IC701 CXD1226Q YNR, CNR, APC
IC717 SN74HC32ANS
IC718 SN74HC08ANS
IC719 NJM2235M CHARACTER INSERT
IC720 NJM2233AM CHARACTER INSERT
Q617 DTC144EK INVERTER
D704 DAN202K
Q620 2SC1623-L5
Q621 2SC1623-L5
CHROMA AMP
Q603 2SC1623-L5
Q604 2SC1623-L5
Q613 2SC1623-L5
AMP
Q605 2SC1623-L5 FEEDBACK CLAMP
Q618 2SC1623-L5 BUFFER
Q601 2SC1623-L5 BUFFER
Q619 2SC1623-L5 BUFFER
Q602 2SC1623-L5 BUFFER
Q607 2SC1623-L5 AMP
Q628 2SC1623-L5 AMP
Q606 2SC1623-L5 AMP
Q608 2SC1623-L5 AMP
Q627 2SC1623-L5 BLANKING LEVEL
Q609 2SA812 BUFFER
Q636 2SA812 BUFFER
Q635 DTC144EK INVERTER
Q637 2SA1226 BUFFER
Q631 2SC2223 OSC
D702 1T32
D707 MA159
D701 1T33C
D712 DAN202
FL601 LPF
FL602 LPF
V SYNC SEP & JOG-VD DET
FEEDBACK CLAMP & 1st SYNC SEP
SYNC CLAMP & 2nd SYNC SEP
H NOISE REDUCER
HALF H KILLER & NOISE REDUCER
ODD/EVEN DET
V&H PULSE GEN
1/455H COUNTER
PHASE COMP
EDGE DET
SKEW DET
910FH VCO
LPF
1/2
WINDOW COMPARATE
PEDESTAL ERROR
PHASE DET
APC
DLY
BPF
C-DEC
A SYNC MPX
Y-NR
C-NR
TP601
TP602
TP603
TP604
TP605
TP606
DIG
no mark: PB mode (S761 DIGITAL EFFECT SW ON)
OV: VTR REC mode 4.3V: PB mode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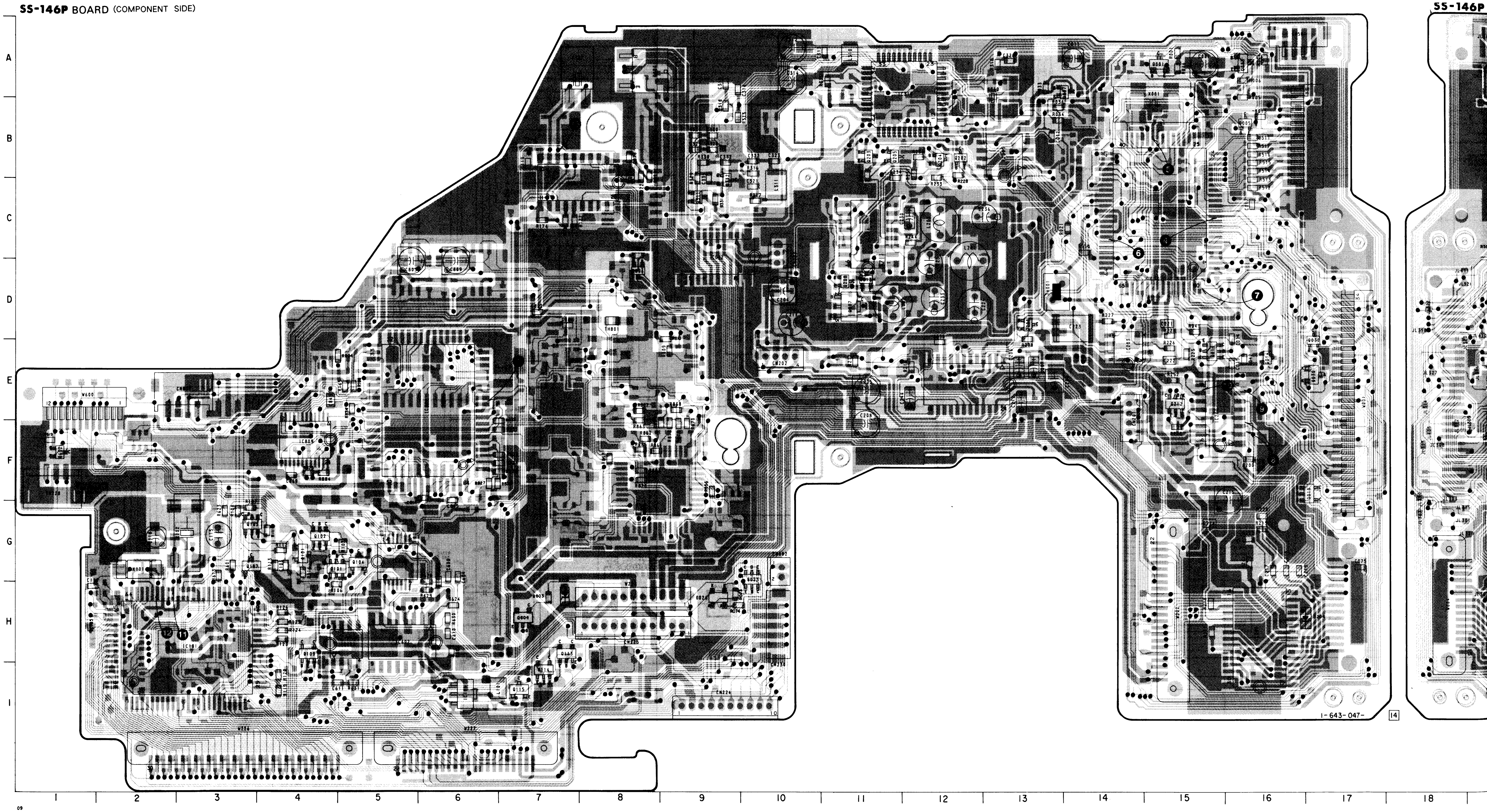
IC705 (H-14) CXK1206M Y MEMORY
IC706 (H-10) CXK1206M Y MEMORY
IC707 (H-9) CXK1206M CHROMA MEMORY
IC717 (K-12) SN74HC32ANS
IC718 (K-13) SN74HC08ANS
IC703 (C-10) CXD1228Q MEMORY CONTROL
READ ADDRESS CONTROL
WRITE ADDRESS CONTROL
SYNC GEN
CLK
ROM TEST
Q638 2SA1226 (B-10) BUFFER
Q632 (J-10) 2SC2223 OSC
D703 (I-9) HVU350-1TRF
Q616 (J-9) 2SK94-T2X3 SWITCH
D708 (J-11) MA159
D713 (I-8) DAN202K
IC715 (C-8) TC74HC4538AF MONO MULTI
IC702 (D-7) CXD1227Q SEG CONTROL CHROMA ENCODER
X'TAL OSC
FRAMING CONTROL
TIMING GEN
VAR DELAY
MUTE
RE-SAMPLE
SEG CONTROL
INT-POL LPF
U/V DE-MPX
OFFSET BIN
SYNC INSERT
DARK CLIP
DOC DET
4→8 DE-MPX
CHROMA OUTPUT
(Y DATA INPUT)
(CHROMA DATA INPUT)
(Y D-A OUTPUT)
IC716 (B-7) TC74HC123AF MMV
IC712 (B-11) MC74HC163F WINDOW PULSE DELAY
Q629 DTC144EK WINDOW PULSE DELAY
Q634 (K-11) FMG2
D712 (I-9) DAN202K
D707 (A-12) MA159
Q623 (J-5) 2SC1623-L5
Q622 (C-4) 2SC1623-L5
Q612 (C-5) 2SC1623-L5
Q611 (J-5) 2SC1623-L5
LPF & AMP
Q610 (J-6) 2SC1623-L5 LPF & AMP
Q614 (H-4) 2SC1623-L5 BPF
Q615 (D-4) 2SC1623-L5 BPF
IC710 (C-6) CXA1106M Y D-A CONVERTER
IC711 (D-5) CXA1106M CHROMA D-A CONVERTER
Q626 (H-3) 2SC1623-L5 EQ
Q630 (D-3) 2SC1623-L5
Q625 (H-4) 2SC1623-L5 BPF
Q624 (E-4) 2SC1623-L5
D/A SYNC LEVEL
DIG
TP607
TP608
TP609

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➠		
PB	⇨	⇒		

SS-146P (SERVO/SYSTEM/MODE CONTROL, TITLER), LI-12P (LITHIUM BATTERY, MONITOR SELECT SWITCH) PRINTED WIRING BOARDS

— Ref. No. SS-146P BOARD: 4000 series, LI-12P BOARD: 5000 series —


SS-146P BOARD (COMPONENT SIDE)
SS-146P
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F
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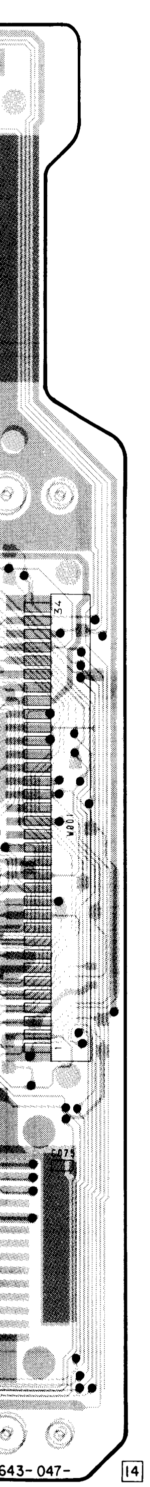
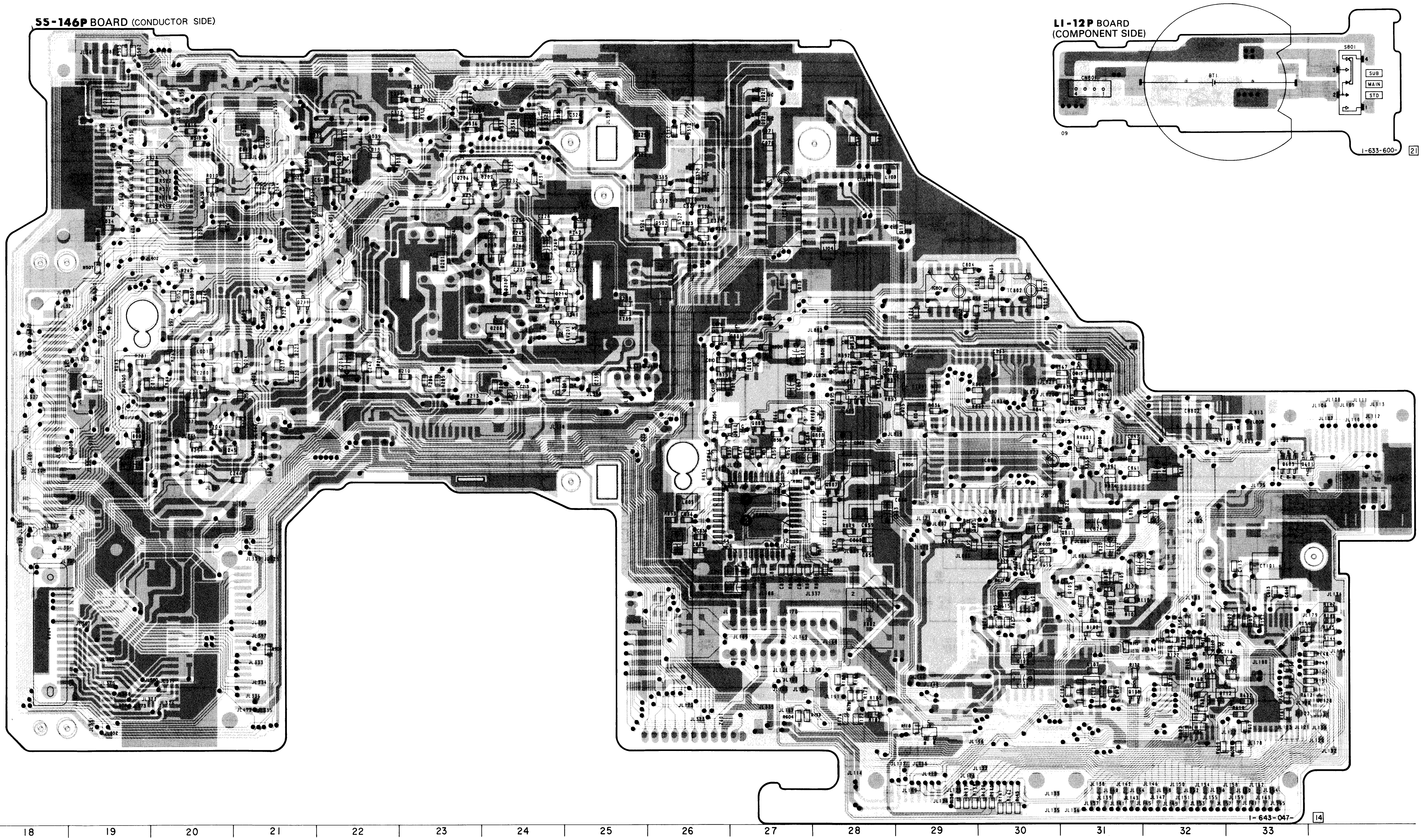
1-643-047-
14



SS-146P BOARD (CONDUCTOR SIDE)

LI-12P BOARD
(COMPONENT SIDE)


SB01
SUB
MAIN
STD
CN801
BT1
09
1-633-600-
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1-643-047-
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(DIODE)

D005	8-719-941-86	DIODE	DAN202U
D026	8-719-940-45	DIODE	DWA010
D030	8-719-104-34	DIODE	1S2836
D101	8-719-108-24	DIODE	1SS223
D102	8-719-938-72	DIODE	SB01-05CP
D200	8-719-938-75	DIODE	SB05-05CP
D201	8-719-938-75	DIODE	SB05-05CP
D202	8-719-104-34	DIODE	1S2836
D203	8-719-977-34	DIODE	DTZ12
D204	8-719-978-23	DIODE	DTZ5. 6-TT11
D601	8-719-023-27	DIODE	MA704WK-TX
D801	8-719-404-46	DIODE	MA110

(IC)

IC001	8-752-836-21	IC	CXP80P116Q-1-205
IC002	8-759-804-72	IC	LB1631M
IC003	8-759-983-69	IC	LM358PS
IC005	8-759-009-51	IC	MC14538BF
IC101	8-759-062-53	IC	uPD75316GF-222-3B9
IC102	8-759-145-63	IC	uPD7564G-540
IC103	8-759-937-54	IC	S-81250HG-RD-S
IC104	8-759-946-03	IC	S-8054ALR-LN-S
IC200	8-759-107-68	IC	CX20115A
IC201	8-759-202-45	IC	CX20114
IC202	8-759-805-06	IC	CXA1127M
IC203	8-759-100-94	IC	uPC358G2
IC204	8-759-945-17	IC	MB3775PF
IC310	8-752-050-54	IC	CXA1449Q
IC601	8-759-999-02	IC	TL1596CDB
IC602	8-759-062-54	IC	MC74HC42F-L
IC603	8-759-044-78	IC	AK6420F
IC801	8-759-056-00	IC	NJM2266M(T1)
IC802	8-759-710-62	IC	NJM2246M
IC804	8-759-998-30	IC	CF79028PG
IC805	8-759-501-36	IC	MB84256A-LL-PF-E1
IC807	8-759-209-97	IC	TC4S81F
IC808	8-759-634-47	IC	M51285BGP
IC809	8-752-039-49	IC	CXA1393AN

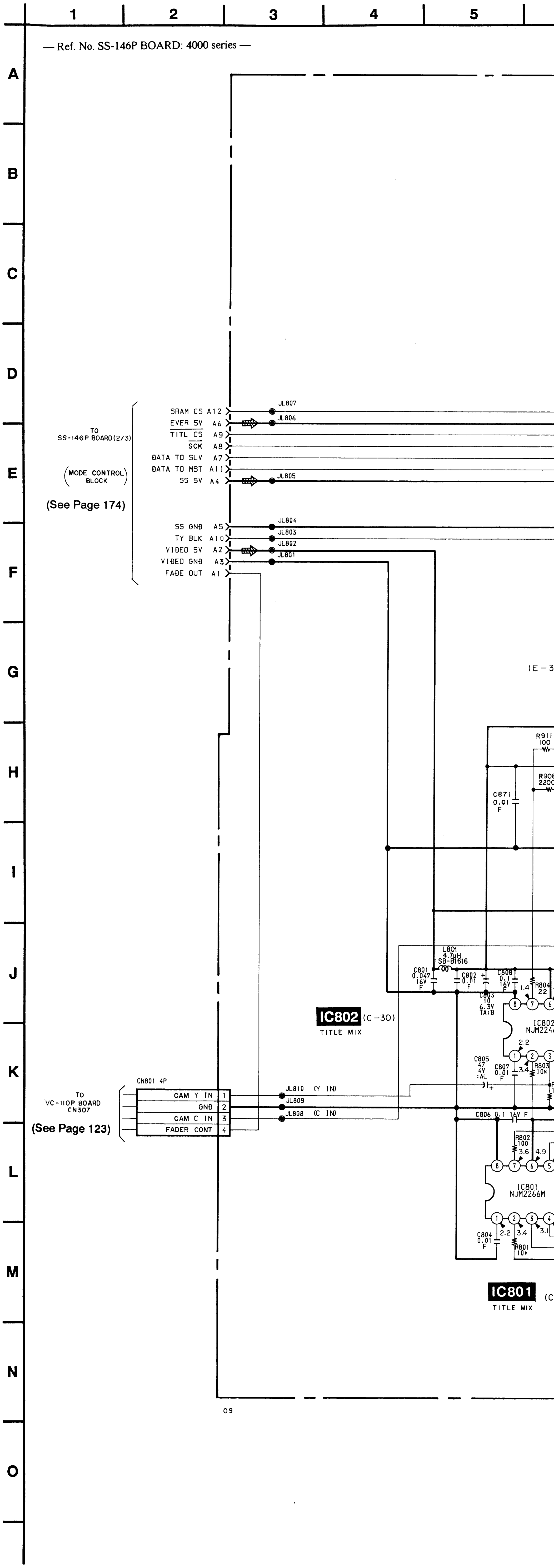
(TRANSISTOR)

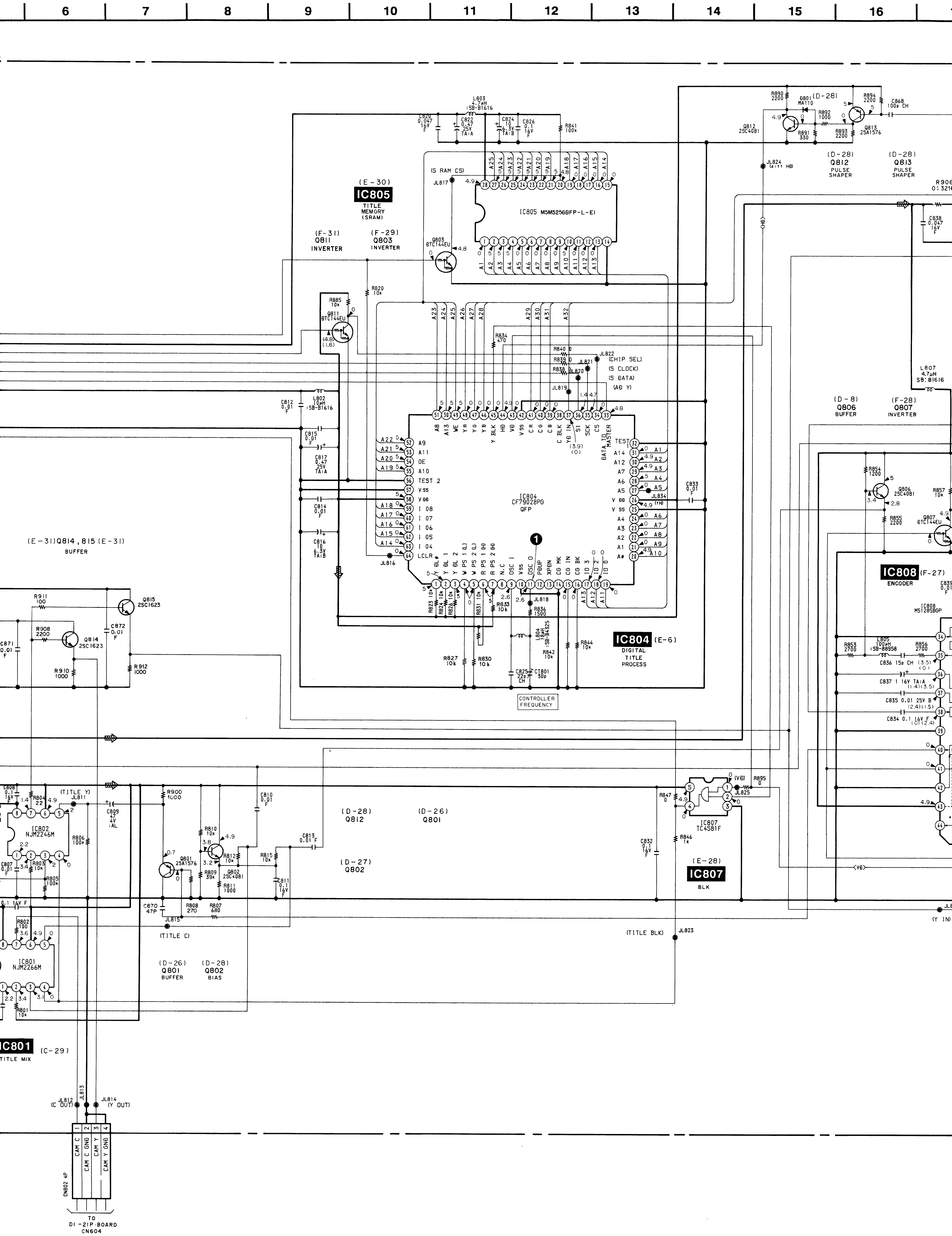
Q001	8-729-100-66	TRANSISTOR	2SC1623
Q003	8-729-100-66	TRANSISTOR	2SC1623
Q005	8-729-907-00	TRANSISTOR	DTC114EU
Q006	8-729-822-84	TRANSISTOR	2SB1202FAST
Q007	8-729-905-35	TRANSISTOR	2SC4081-R
Q010	8-729-907-03	TRANSISTOR	FMG5
Q013	8-729-907-26	TRANSISTOR	IMX1
Q014	8-729-905-35	TRANSISTOR	2SC4081-R
Q020	8-729-905-12	TRANSISTOR	DTA144EU
Q021	8-729-905-18	TRANSISTOR	DTC144EU
Q023	8-729-920-39	TRANSISTOR	IMT-1US
Q030	8-729-905-18	TRANSISTOR	DTC144EU
Q101	8-729-402-78	TRANSISTOR	XN6401
Q102	8-729-402-19	TRANSISTOR	XN6501
Q103	8-729-402-78	TRANSISTOR	XN6401
Q104	8-729-216-22	TRANSISTOR	2SA1162
Q105	8-729-109-44	TRANSISTOR	2SK94
Q106	8-729-905-15	TRANSISTOR	DTC144WU
Q107	8-729-100-66	TRANSISTOR	2SC1623
Q108	8-729-905-12	TRANSISTOR	DTA144EU
Q109	8-729-904-20	TRANSISTOR	FMA2
Q110	8-729-905-23	TRANSISTOR	2SA1576-R
Q111	8-729-905-18	TRANSISTOR	DTC144EU
Q112	8-729-109-44	TRANSISTOR	2SK94-X4
Q113	8-729-902-96	TRANSISTOR	FMS1
Q114	8-729-903-82	TRANSISTOR	FMW2
Q115	8-729-100-66	TRANSISTOR	2SC1623-L6
Q200	8-729-905-12	TRANSISTOR	DTA144EU
Q201	8-729-216-22	TRANSISTOR	2SA1162-G
Q202	8-729-905-35	TRANSISTOR	2SC4081-R
Q203	8-729-905-12	TRANSISTOR	DTA144EU
Q204	8-729-905-61	TRANSISTOR	DTC124EU
Q205	8-729-905-18	TRANSISTOR	DTC144EU
Q206	8-729-100-66	TRANSISTOR	2SC1623-L6
Q207	8-729-805-25	TRANSISTOR	2SB1121-S
Q208	8-729-119-83	TRANSISTOR	2SC4175-B3
Q209	8-729-805-25	TRANSISTOR	2SB1121-S
Q210	8-729-162-13	TRANSISTOR	2SC1621-B3
Q211	8-729-905-18	TRANSISTOR	DTC144EU
Q212	8-729-920-39	TRANSISTOR	IMT-1US
Q213	8-729-905-18	TRANSISTOR	DTC144EU
Q214	8-729-920-XX	TRANSISTOR	DTA114EUT106
Q310	8-729-216-22	TRANSISTOR	2SA1162-G
Q311	8-729-905-35	TRANSISTOR	2SC4081-R
Q312	8-729-905-24	TRANSISTOR	2SA1576-S
Q501	8-729-905-35	TRANSISTOR	2SC4081-R
Q502	8-729-905-18	TRANSISTOR	DTC144EU
Q601	8-729-905-12	TRANSISTOR	DTA144EU
Q602	8-729-905-XX	TRANSISTOR	DTC114TUT106
Q603	8-729-403-10	TRANSISTOR	XN6215
Q604	8-729-921-25	TRANSISTOR	FMC2
Q801	8-729-905-23	TRANSISTOR	2SA1576-R
Q802	8-729-905-35	TRANSISTOR	2SC4081-R
Q803	8-729-905-18	TRANSISTOR	DTC144EU
Q806	8-729-905-35	TRANSISTOR	2SC4081-R
Q807	8-729-905-18	TRANSISTOR	DTC144EU
Q808	8-729-905-35	TRANSISTOR	2SC4081-R
Q809	8-729-905-35	TRANSISTOR	2SC4081-R
Q810	8-729-905-23	TRANSISTOR	2SA1576-R
Q811	8-729-905-18	TRANSISTOR	DTC144EU
Q812	8-729-905-35	TRANSISTOR	2SC4081-R
Q813	8-729-905-23	TRANSISTOR	2SA1576-R
Q814	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q815	8-729-120-28	TRANSISTOR	2SC1623-L5L6

SS-146P (TITLER) SCHEMATIC DIAGRAM

- Refer to page 165 for Printed Wiring B

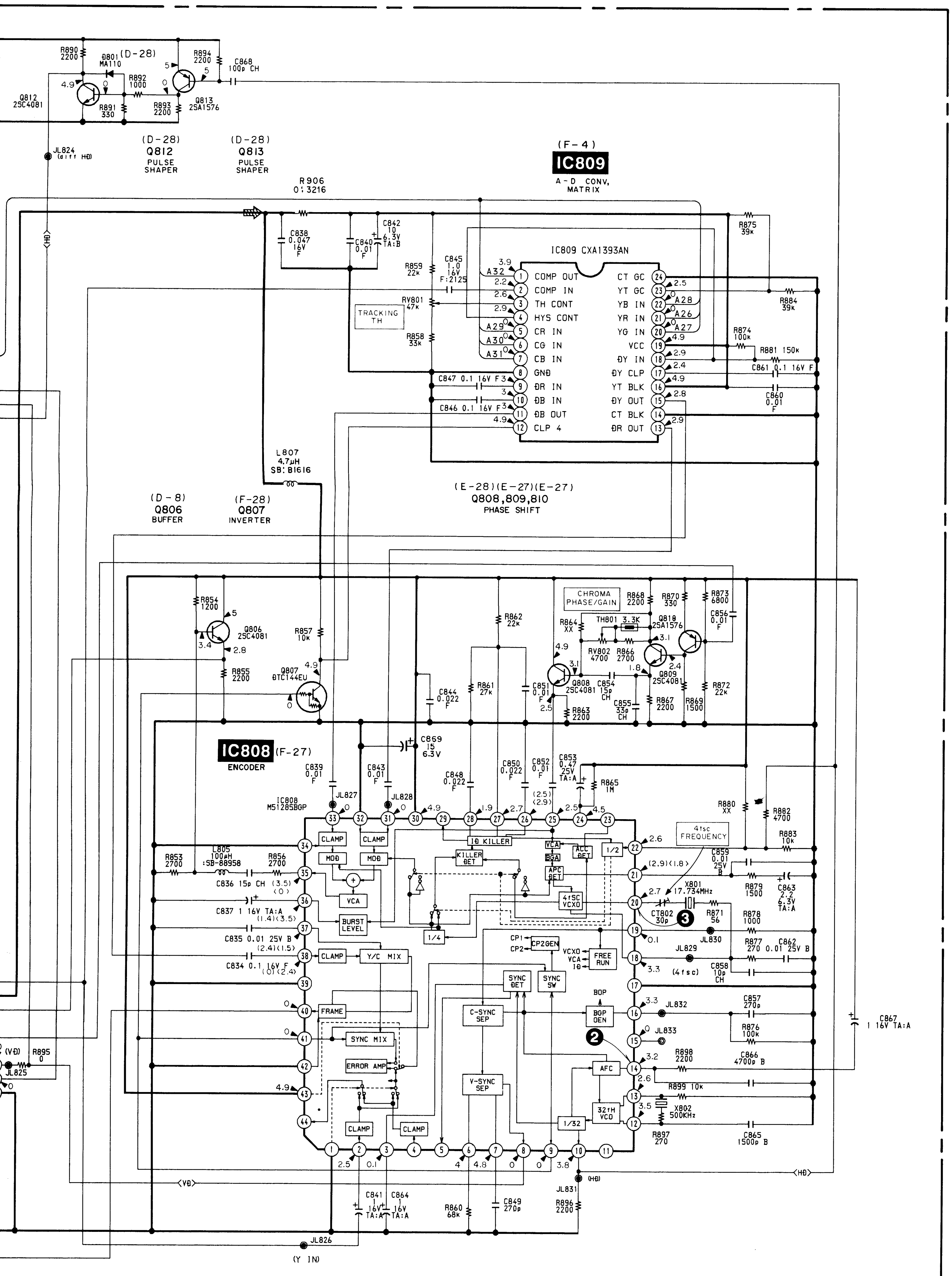
— Ref. No. SS-146P BOARD: 4000 series —


1
2
3
4
5
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TO
SS-146P BOARD(2/3)
(MODE CONTROL BLOCK)
(See Page 174)
SRAM CS A12
EVER 5V A6
TITL CS A9
SCK A8
DATA TO SLV A7
DATA TO MST A11
SS 5V A4
SS GND A5
TY BLK A10
VIDEO 5V A2
VIDEO GND A3
FADE OUT A1
JL807
JL806
JL805
JL804
JL803
JL802
JL801
(E-3
R911
100
R908
2200
C871
0.01
F
L801
4.7μH
:SB-B1616
C801
0.047
16V
F
C802
0.01
F
C803
10
6.3V
TA:B
C808
0.1
16V
F
1.4
R804
22
IC802
NJM224
2.2
3.4
C805
47
4V
:AL
C807
0.01
F
R803
10k
IC802 (C-30)
TITLE MIX
TO
VC-110P BOARD
CN307
(See Page 123)
CN801 4P
CAM Y IN 1
GND 2
CAM C IN 3
FADER CONT 4
JL810 (Y IN)
JL809
JL808 (C IN)
C806 0.1 16V F
R802
100
3.6
4.9
IC801
NJM2266M
C804
0.01
F
2.2
3.4
3.1
R801
10k
IC801 (C
TITLE MIX
09


6
7
8
9
10
11
12
13
14
15
16
IC805
(E-30)
TITLE MEMORY (SRAM)
IC805 M5M5256BFP-L-EI
(S RAM CS)
L803 4.7μH :SB-B1616
C820 0.047 16V F
C822 0.47 25V TA:A
C824 10 6.3V TA:B
C826 0.1 16V F
R841 100k
(F-31) Q811 INVERTER
(F-29) Q803 INVERTER
Q803 DTC144EU
Q811 DTC144EU
R885 10k
R820 10k
IC804
(E-6)
DIGITAL TITLE PROCESS
IC804 CF79028PG QFP
(CHIP SEL)
(S CLOCK)
(S DATA)
(AD Y)
JL816
JL817
JL818
JL819
JL820
JL821
JL822
JL834
L802 10μH :SB-B1616
L804 18μH :SB-B4325
C812 0.01 F
C815 0.01 F
C817 0.47 25V TA:A
C814 0.01 F
C816 10 6.3V TA:B
C833 0.01 F
C825 22p CH
CT801 30p
R827 10k
R830 10k
R833 10k
R834 470
R836 1500
R842 10k
R844 10k
CONTROLLER FREQUENCY
(E-31) Q814, 815 (E-31) BUFFER
Q815 2SC1623
Q814 2SC1623
R911 100
R908 2200
R910 1000
R912 1000
C871 0.01 F
C872 0.01 F
(TITLE Y)
JL811
IC802 NJM2246M
C809 47 4V :AL
R806 100k
R805 100k
R900 1000
C810 0.01 F
Q801 2SA1576
Q802 2SC4081
R810 10k
R812 10k
R809 39k
R811 1000
R808 270
R807 680
C870 47P
JL815
(TITLE C)
C813 0.01 F
R815 10k
C811 0.1 16V F
(D-28) Q812
(D-26) Q801
(D-27) Q802
(D-26) Q801 BUFFER
(D-28) Q802 BIAS
IC801 NJM2266M
R801 10k
R802 100
IC801
(C-29)
TITLE MIX
JL812 (C OUT)
JL813
JL814 (Y OUT)
CAM C
CAM C GND
CAM Y
CAM Y GND
CN802 4P
TO DI-21P BOARD CN604
IC807
(E-28)
BLK
IC807 TC4581F
(VD)
R895 0
JL825
R847 0
R846 1k
C832 0.1 16V F
(TITLE BLK)
JL823
R890 2200
D801 (D-28) MA110
R892 1000
R891 330
R893 2200
R894 2200
C868 100p CH
Q812 2SC4081
Q813 2SA1576
JL824 (diff HD)
(D-28) Q812 PULSE SHAPER
(D-28) Q813 PULSE SHAPER
C838 0.047 16V F
(HD)
L807 4.7μH SB:B1616
(D-8) Q806 BUFFER
(F-28) Q807 INVERTER
R854 1200
Q806 2SC4081
R857 10k
R855 2200
Q807 DTC144EU
IC808
(F-27)
ENCODER
IC808 M51285BGP
R853 2700
L805 100μH :SB-B8958
R856 2700
C836 15p CH
C837 1 16V TA:A
C835 0.01 25V B
C834 0.1 16V F
(VD)
(Y IN)

(See Page 161)

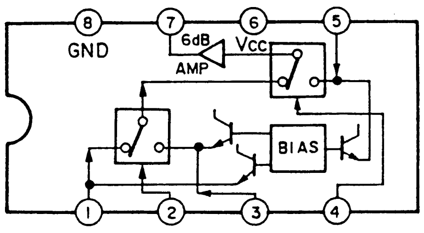
- All resistors are in ohms, 1/16W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .


(D-28) Q812 PULSE SHAPER
(D-28) Q813 PULSE SHAPER
Q812 2SC4081
Q813 2SA1576
D801 MA110
(F-4) IC809 A-D CONV. MATRIX
IC809 CXA1393AN
COMP OUT
COMP IN
TH CONT
HYS CONT
CR IN
CG IN
CB IN
GND
DR IN
DB IN
DB OUT
CLP 4
CT GC
YT GC
YB IN
YR IN
YG IN
VCC
DY IN
DY CLP
YT BLK
DY OUT
CT BLK
DR OUT
TRACKING TH
RV801 47k
R906 0:3216
L807 4.7μH SB:B1616
(D-8) Q806 BUFFER
(F-28) Q807 INVERTER
(E-28)(E-27)(E-27) Q808,809,810 PHASE SHIFT
Q806 2SC4081
Q807 DTC144EU
Q808 2SC4081
Q809 2SC4081
Q810 2SA1576
CHROMA PHASE/GAIN
TH801 3.3K
RV802 4700
IC808 (F-27) ENCODER
IC808 M51285BGP
CLAMP
MOD
VCA
BURST LEVEL
Y/C MIX
FRAME
SYNC MIX
ERROR AMP
ID KILLER
KILLER DET
ACC DET
APC DET
1/2
4fSC VCXO
1/4
CP2GEN
FREE RUN
SYNC DET
SYNC SW
C-SYNC SEP
V-SYNC SEP
BGP GEN
AFC
32fH VCO
1/32
4fsc FREQUENCY
X801 17.734MHz
X802 500KHz
L805 100μH :SB-B8958
JL824 (diff HD)
JL825
JL826 (Y IN)
JL827
JL828
JL829
JL830
JL831
JL832
JL833
⟨HD⟩
⟨VD⟩
(VD)

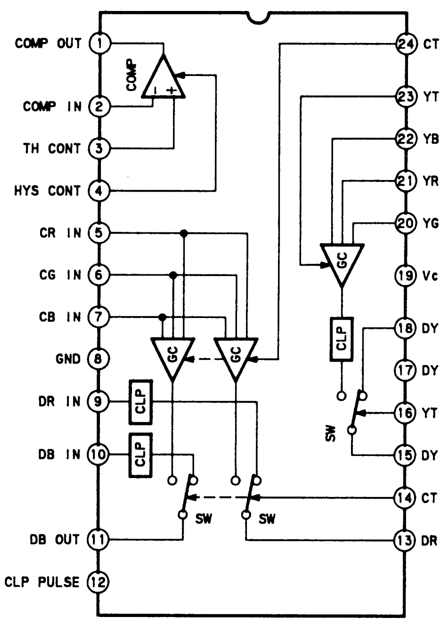
no mark : REC/ PB mode
( ) : REC mode
⟨ ⟩ : PB mode
✱ : impossible to measure the voltage of the marked points.

SS-146P BOARD(1/3)(TITLER BLOCK)

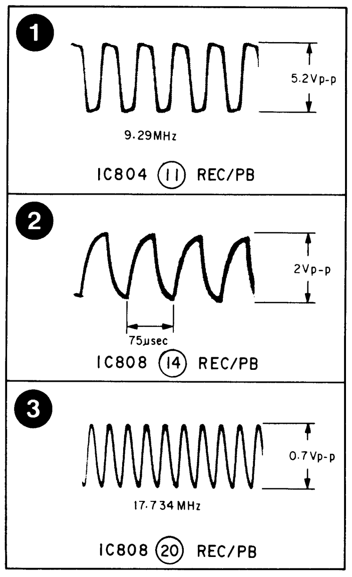
IC801 NJM2266M
IC802 NJM2246M


8
GND
7
6dB AMP
6
Vcc
5
BIAS
1
2
3
4

IC809 CXA1393AN


COMP OUT 1
COMP IN 2
TH CONT 3
HYS CONT 4
CR IN 5
CG IN 6
CB IN 7
GND 8
DR IN 9
DB IN 10
DB OUT 11
CLP PULSE 12
24 CT GC
23 YT GC
22 YB IN
21 YR IN
20 YG IN
19 Vcc
18 DY IN
17 DY CLP
16 YT BLK
15 DY OUT
14 CT BLK
13 DR OUT
COMP
GC
CLP
SW

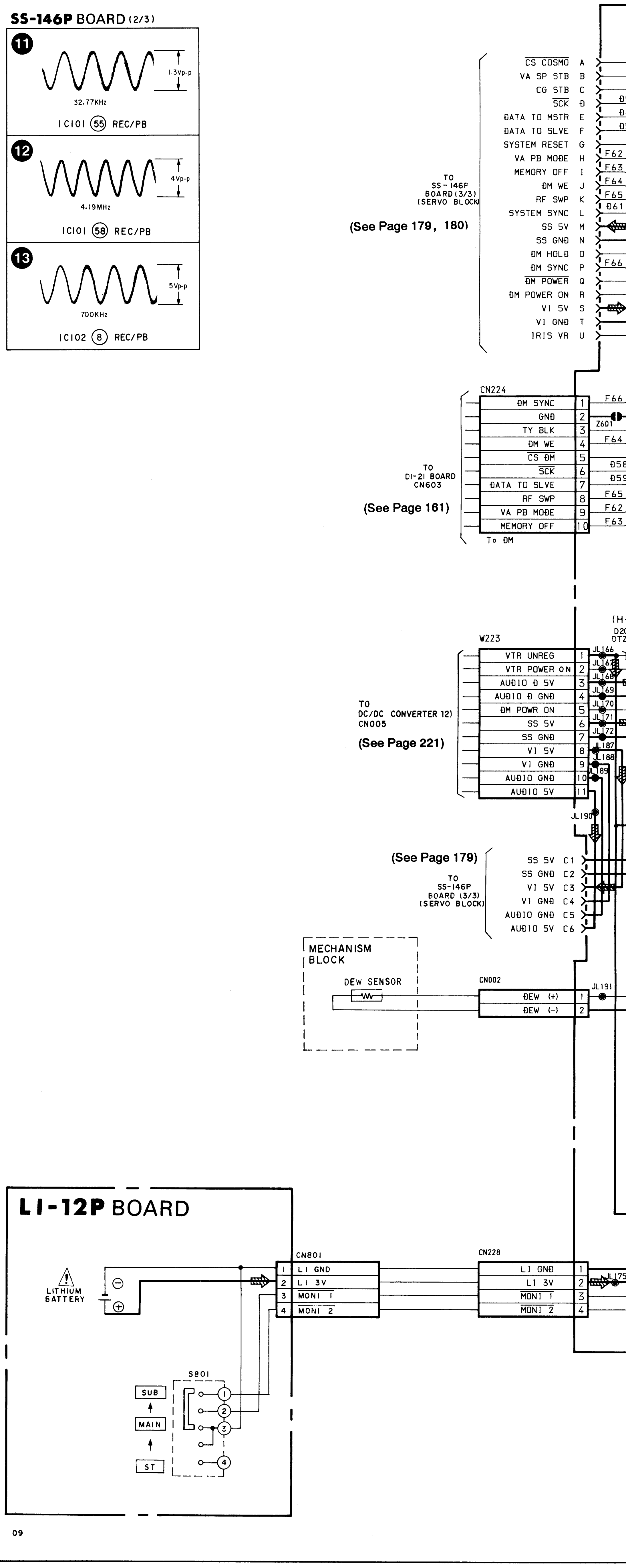
SS-146P BOARD(1/3)

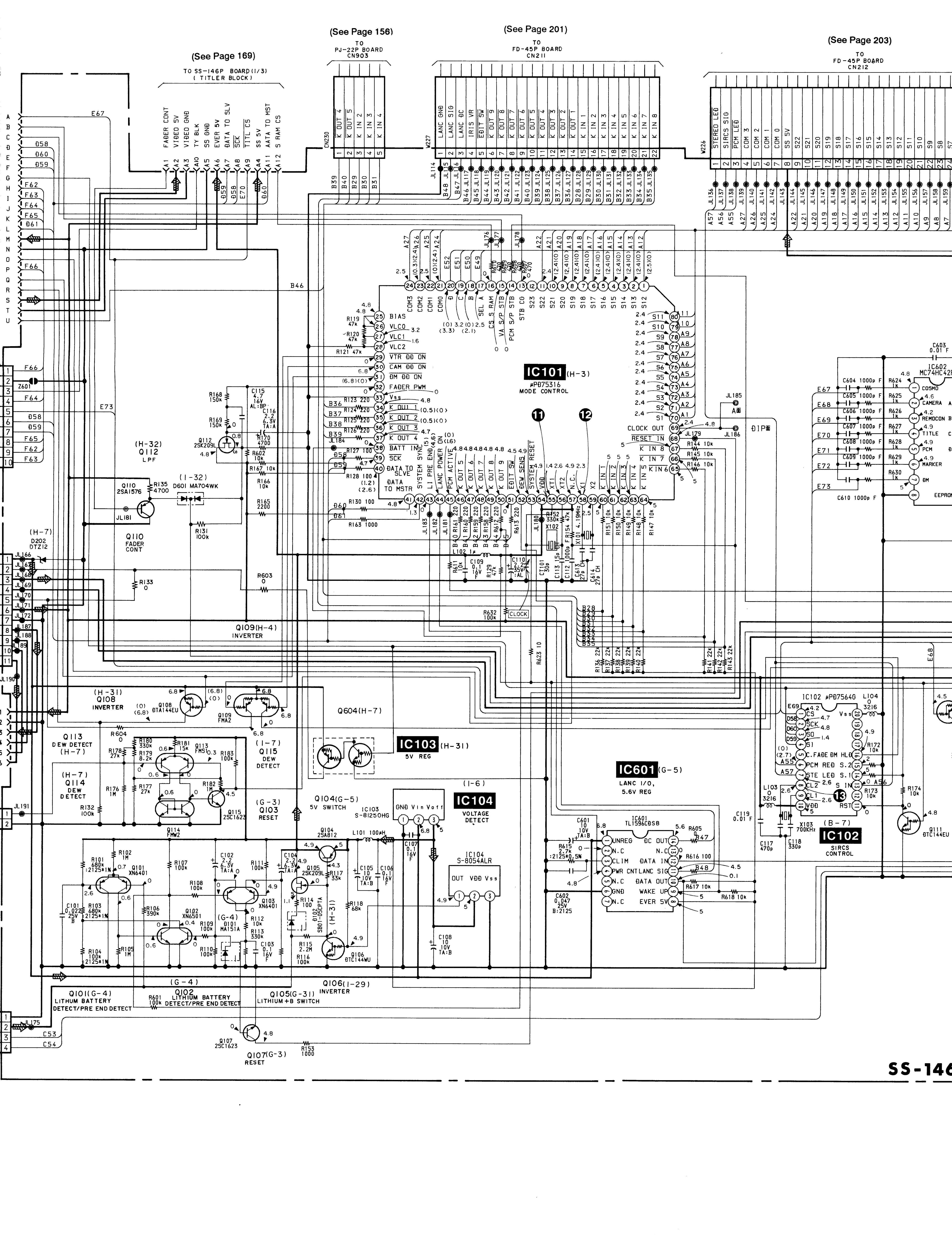


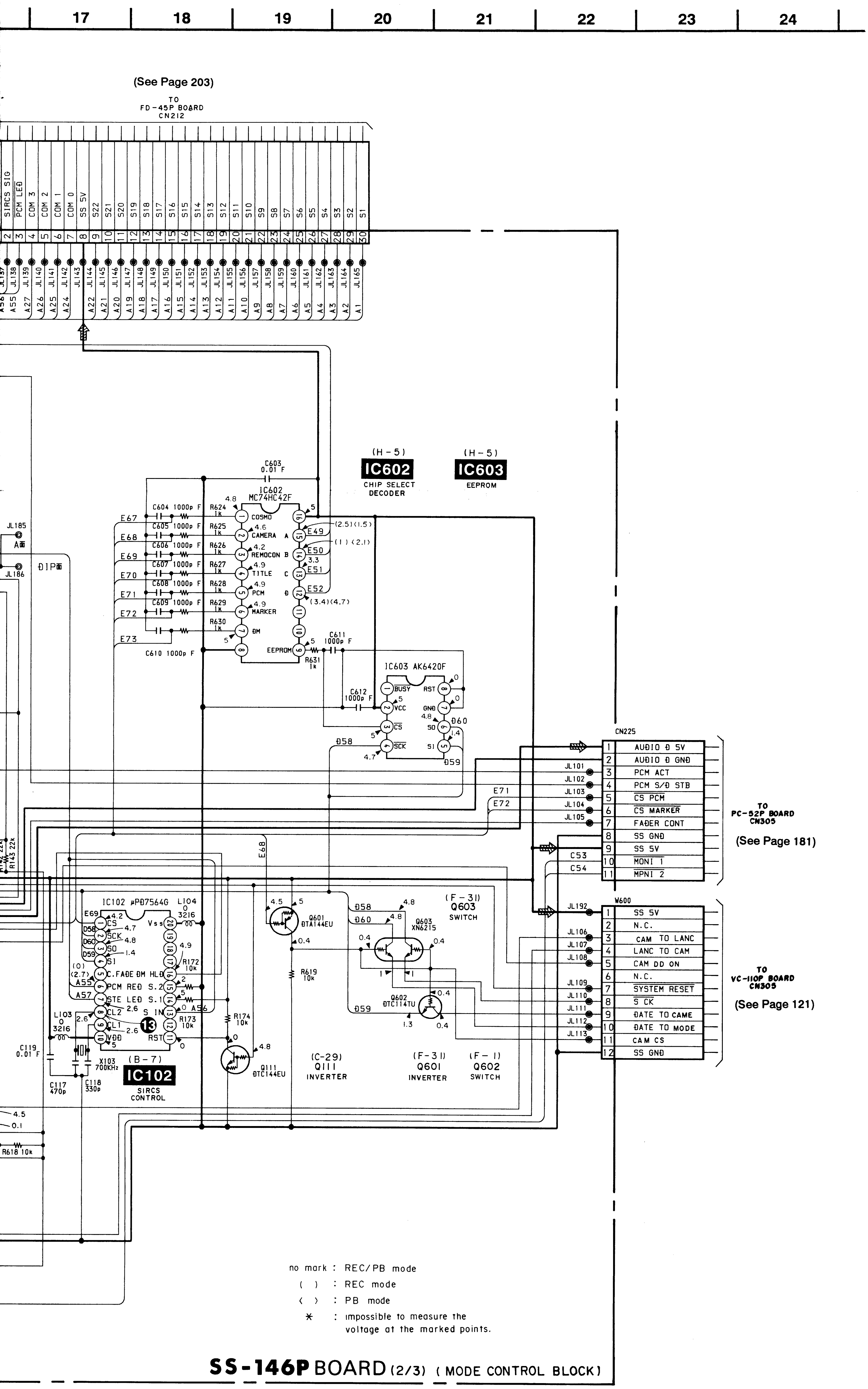
SS-146P (MODE CONTROL), LI-12P (LITHIUM BATTERY, MONITOR SELECT SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. SS-146P BOARD: 4000 series, LI-12P BOARD: 5000 series —

- All resistors are in ohms, 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .


SS-146P BOARD (2/3)
⑪ 1.3Vp-p 32.77KHz IC101 (55) REC/PB
⑫ 4Vp-p 4.19MHz IC101 (58) REC/PB
⑬ 5Vp-p 700KHz IC102 (8) REC/PB
TO SS-146P BOARD (3/3) (SERVO BLOCK)
(See Page 179, 180)
CS COSMO A
VA SP STB B
CG STB C
SCK D
DATA TO MSTR E
DATA TO SLVE F
SYSTEM RESET G
VA PB MODE H
MEMORY OFF I
DM WE J
RF SWP K
SYSTEM SYNC L
SS 5V M
SS GND N
DM HOLD O
DM SYNC P
DM POWER Q
DM POWER ON R
VI 5V S
VI GND T
IRIS VR U
F62
F63
F64
F65
D61
F66
CN224
TO DI-21 BOARD CN603
(See Page 161)
1 DM SYNC
2 GND
3 TY BLK
4 DM WE
5 CS DM
6 SCK
7 DATA TO SLVE
8 RF SWP
9 VA PB MODE
10 MEMORY OFF
To DM
Z601
D58
D59
W223
TO DC/DC CONVERTER 12) CN005
(See Page 221)
1 VTR UNREG
2 VTR POWER ON
3 AUDIO D 5V
4 AUDIO D GND
5 DM POWR ON
6 SS 5V
7 SS GND
8 VI 5V
9 VI GND
10 AUDIO GND
11 AUDIO 5V
JL166
JL167
JL168
JL169
JL170
JL171
JL172
JL187
JL188
JL189
JL190
(See Page 179)
TO SS-146P BOARD (3/3) (SERVO BLOCK)
SS 5V C1
SS GND C2
VI 5V C3
VI GND C4
AUDIO GND C5
AUDIO 5V C6
MECHANISM BLOCK
DEW SENSOR
CN002
1 DEW (+)
2 DEW (−)
JL191
LI-12P BOARD
LITHIUM BATTERY
CN801
1 LI GND
2 LI 3V
3 MONI 1
4 MONI 2
S801
SUB
MAIN
ST
CN228
1 LI GND
2 LI 3V
3 MONI 1
4 MONI 2
JL175
09

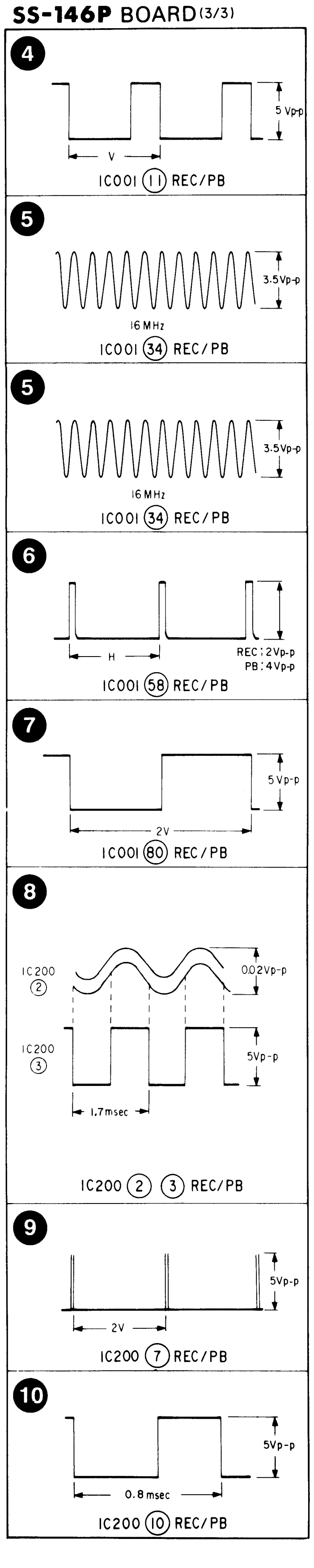

(See Page 169)
TO SS-146P BOARD (1/3) (TITLER BLOCK)
(See Page 156)
TO PJ-22P BOARD CN903
(See Page 201)
TO FD-45P BOARD CN211
(See Page 203)
TO FD-45P BOARD CN212
CN230
W227
W226
FADER CONT
VIDEO 5V
VIDEO GND
TY BLK
SS GND
EVER 5V
DATA TO SLV
SCK
TITL CS
SS 5V
DATA TO MST
S RAM CS
K OUT 4
K OUT 5
K IN 2
K IN 3
K IN 4
LANC GND
LANC SIG
LANC DC
IRIS VR
EDIT SW
K OUT 9
K OUT 8
K OUT 7
K OUT 6
K OUT 5
K OUT 4
K OUT 3
K OUT 2
K OUT 1
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
K IN 7
K IN 8
STEREO LED
SIRCS SIG
PCM LED
COM 3
COM 2
COM 1
COM 0
SS 5V
IC101 (H-3)
μPD75316
MODE CONTROL
BIAS
VLC0
VLC1
VLC2
VTR DD ON
CAM DD ON
DM DD ON
FADER PWM
Vss
K OUT 1
K OUT 2
K OUT 3
K OUT 4
BATT IN
SCK
DATA TO SLVE
DATA TO MSTR
CLOCK OUT
RESET IN
K IN 8
K IN 7
K IN 6
SYSTEM SYNC
L1 PRE END
LANC POWER ON
PCM ACTIVE
DEW SENS
SYSTEM RESET
VDD
XT1
XT2
N.C.
X1
X2
CS S RAM
SEL A
VA S/P STB
PCM S/P STB
STB CG
X101 4.19MHz
X102
CT101 30p
CLOCK
DIP
(H-32) Q112 LPF
2SK209L
Q110 2SA1576
Q110 FADER CONT
(I-32) D601 MA704WK
(H-7) D202 DTZ12
Q109(H-4) INVERTER
(H-31) Q108 INVERTER
Q108 DTA144EU
Q109 FMA2
Q604(H-7)
IC103 (H-31) 5V REG
Q113 DEW DETECT (H-7)
(H-7) Q114 DEW DETECT
(I-7) Q115 DEW DETECT
Q113 FMS1
Q114 FMW2
Q115 2SC1623
(G-3) Q103 RESET
Q104(G-5) 5V SWITCH
IC103 S-8125OHG
GND Vin Voff
IC104 VOLTAGE DETECT
(I-6)
IC104 S-8054ALR
OUT VDD Vss
Q104 2SA812
L101 100μH
Q105 2SK209L
D102 SB01-05CPTA
(H-31)
Q106 DTC144WU
Q101 XN6401
Q102 XN6501
Q103 XN6401
(G-4) D101 MA151A
Q101(G-4) LITHIUM BATTERY DETECT/PRE END DETECT
(G-4) Q102 LITHIUM BATTERY DETECT/PRE END DETECT
Q105(G-31) LITHIUM +B SWITCH
Q106(I-29) INVERTER
Q107 2SC1623
Q107(G-3) RESET
IC601 (G-5) LANC I/O, 5.6V REG
IC601 TL1596CDSB
UNREG
DC OUT
N.C
CLIM
DATA IN
PWR CNT
LANC SIG
DATA OUT
GND
WAKE UP
EVER 5V
IC102 μPD75564G
CS
SCK
SO
SI
C.FADE DM HLD
PCM RED
STE LED
CL2
CL1
VDD
RST
Vss
S IN
X103 700KHz
(B-7) IC102 SIRCS CONTROL
Q111 DTC144EU
IC602 MC74HC4
COSMO
CAMERA
REMOCON
TITLE
PCM
MARKER
DM
EEPROM
⑪
⑫
⑬
SS-146

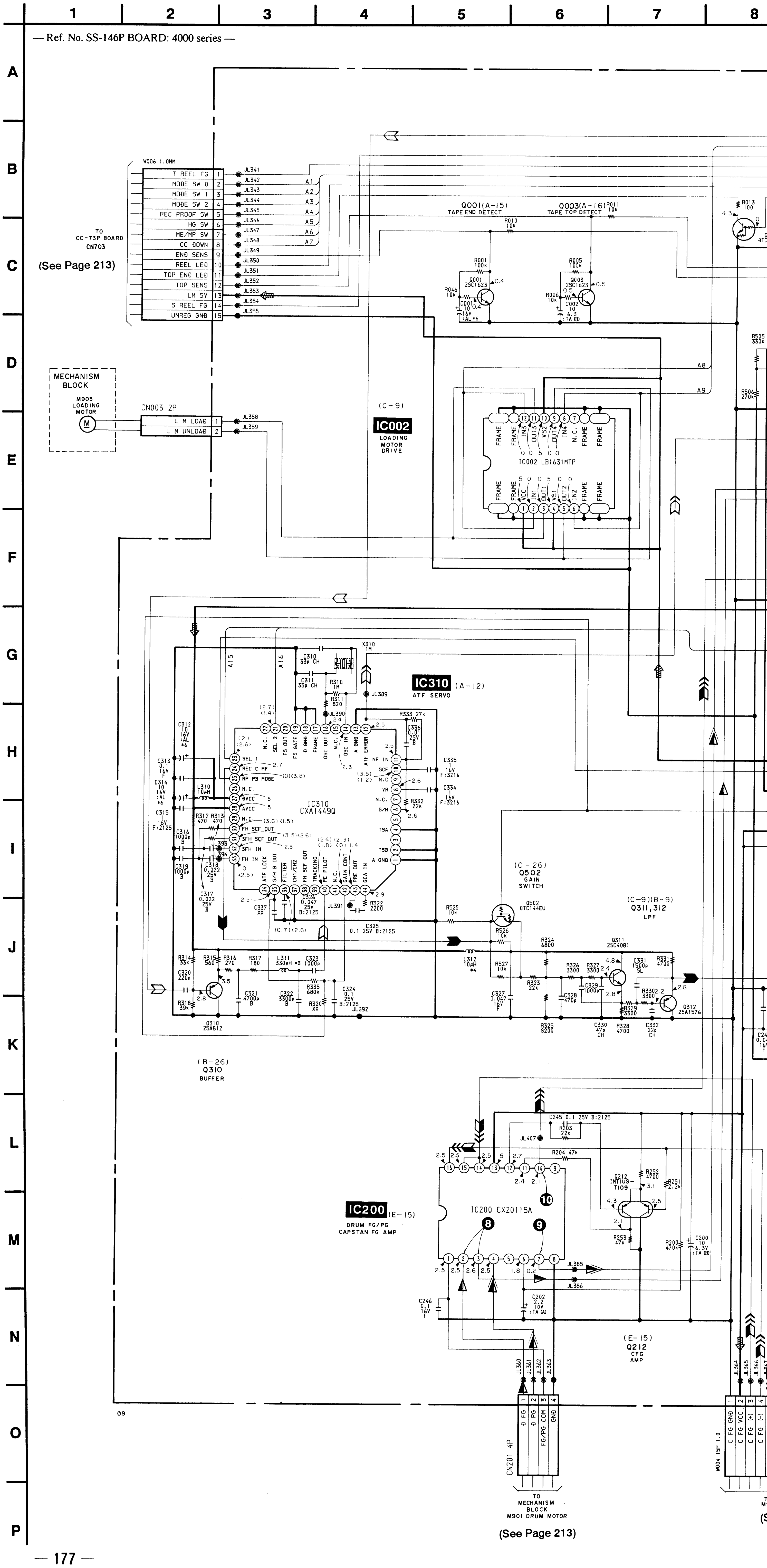

17
18
19
20
21
22
23
24
(See Page 203)
TO FD-45P BOARD CN212
SIRCS SIG
PCM LED
COM 3
COM 2
COM 1
COM 0
SS 5V
S22
S21
S20
S19
S18
S17
S16
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
(H-5)
IC602
CHIP SELECT DECODER
(H-5)
IC603
EEPROM
IC602 MC74HC42F
C603 0.01 F
COSMO
CAMERA
REMOCON
TITLE
PCM
MARKER
DM
EEPROM
IC603 AK6420F
BUSY
VCC
CS
SCK
RST
GND
SO
SI
CN225
AUDIO D 5V
AUDIO D GND
PCM ACT
PCM S/D STB
CS PCM
CS MARKER
FADER CONT
SS GND
SS 5V
MONI 1
MPNI 2
TO PC-52P BOARD CN305
(See Page 181)
W600
SS 5V
N.C.
CAM TO LANC
LANC TO CAM
CAM DD ON
N.C.
SYSTEM RESET
S CK
DATE TO CAME
DATE TO MODE
CAM CS
SS GND
TO VC-110P BOARD CN305
(See Page 121)
IC102 μPD7564G
(B-7)
IC102
SIRCS CONTROL
X103 700KHz
(F-31)
Q603
SWITCH
Q601 DTA144EU
Q603 XN6215
Q602 DTC114TU
Q111 DTC144EU
(C-29)
Q111
INVERTER
(F-31)
Q601
INVERTER
(F-1)
Q602
SWITCH

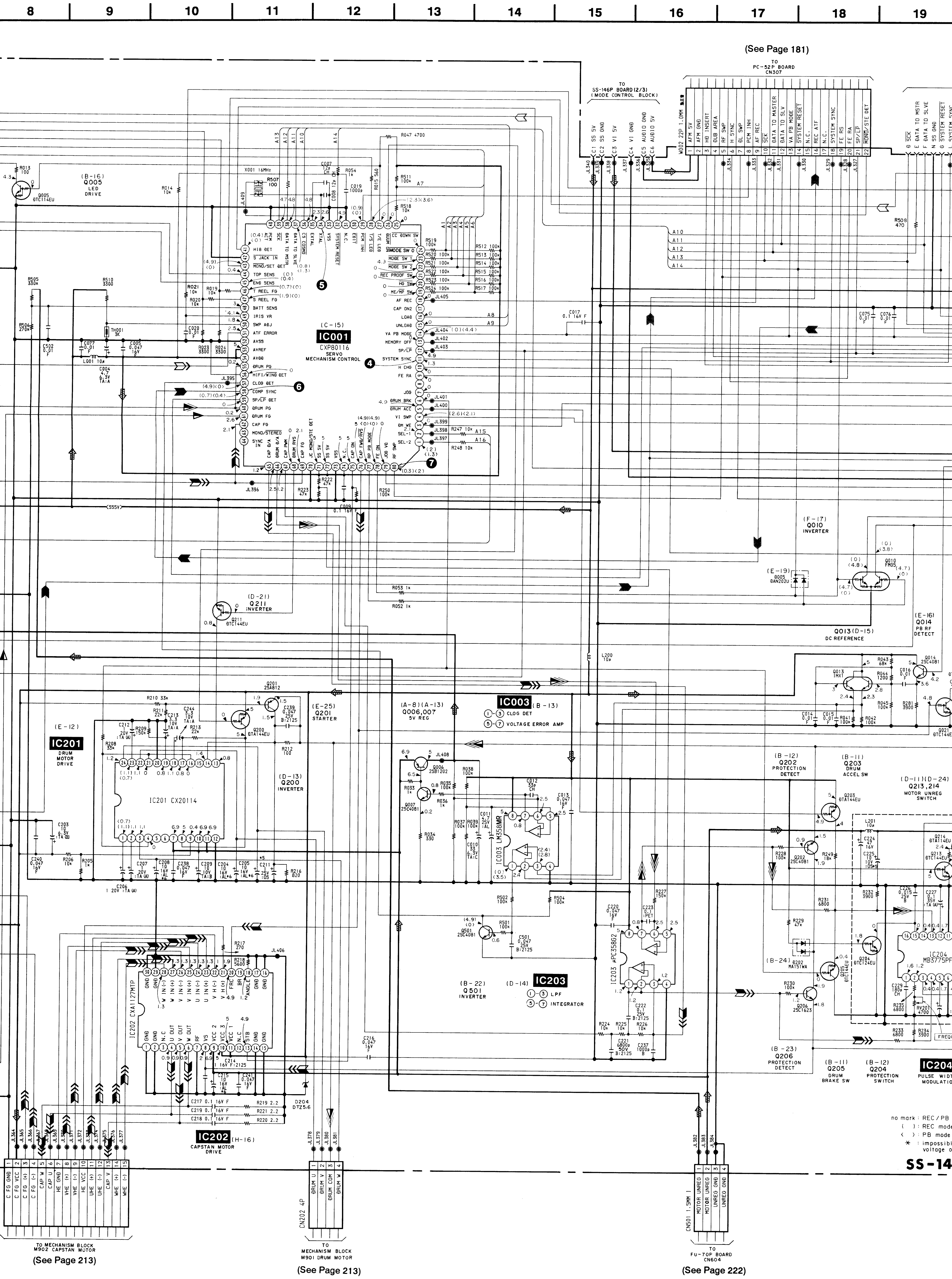
no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
＊ : impossible to measure the voltage at the marked points.

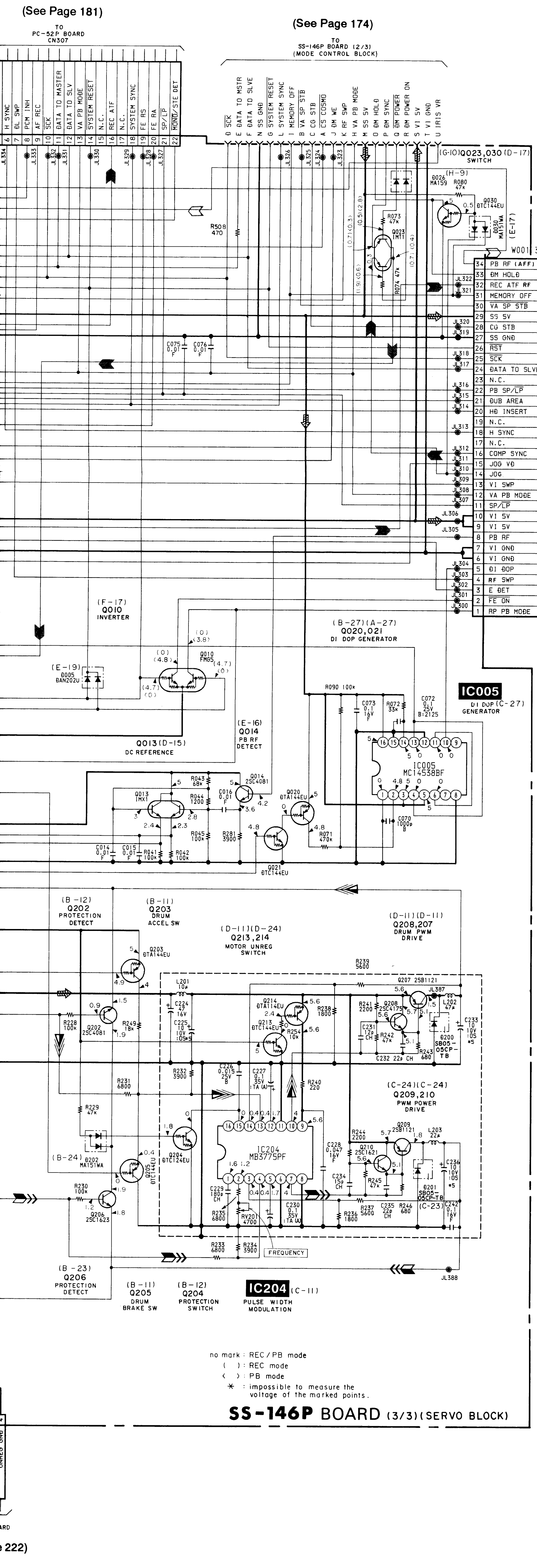
SS-146P BOARD (2/3) (MODE CONTROL BLOCK)

— Ref. No. SS-146P BOARD: 4000 series —




1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
W006 1.0MM
T REEL FG
MODE SW 0
MODE SW 1
MODE SW 2
REC PROOF SW
HG SW
ME/MP SW
CC DOWN
END SENS
REEL LED
TOP END LED
TOP SENS
LM SV
S REEL FG
UNREG GND
TO CC-73P BOARD CN703
(See Page 213)
JL341
JL342
JL343
JL344
JL345
JL346
JL347
JL348
JL349
JL350
JL351
JL352
JL353
JL354
JL355
A1
A2
A3
A4
A5
A6
A7
A8
A9
Q001(A-15) TAPE END DETECT
Q003(A-16) TAPE TOP DETECT
R010 10k
R011 10k
R001 100k
R005 100k
Q001 2SC1623
Q003 2SC1623
R046 10k
R006 10k
C001 10 16V :AL *6
C002 10 6.3 :TA
R013 100
R505 330k
R506 270k
MECHANISM BLOCK
M903 LOADING MOTOR
CN003 2P
L M LOAD
L M UNLOAD
JL358
JL359
(C-9)
IC002
LOADING MOTOR DRIVE
FRAME
IN3
OUT3
VS2
OUT4
IN4
N.C.
VCC
IN1
OUT1
VS1
OUT2
IN2
IC002 LB1631MTP
X310 1M
C310 33p CH
C311 33p CH
R310 1M
R311 820
JL389
JL390
IC310 (A-12)
ATF SERVO
R333 27k
C336 0.01 25V B
C335 1 16V F:3216
C334 1 16V F:3216
R332 22k
IC310 CXA1449Q
SEL 1
REC C RF
RP PB MODE
N.C.
DVCC
AVCC
FH SCF OUT
3FH SCF OUT
3FH IN
FH IN
ATF LOCK
S/H B OUT
FILTER
CH1/CH2
FH SCF OUT
TRACKING
PE PILOT
GAIN CONT
PRE OUT
GCA IN
ATF NF IN
SCF
N.C
VR
N.C.
S/H
TSA
TSB
A GND
SEL 2
FS OUT
FS GATE
D GND
FRAME
OSC OUT
OSC IN
A GND
ATF ERROR
A15
A16
C312 10 16V :AL *6
C313 0.1 16V F
C314 10 16V :AL *6
C315 1 16V F:2125
L310 10µH
C316 1000p B
R312 470
R313 470
C319 1000p B
C318 0.022 25V B
C317 0.022 25V B
C337 XX
C326 0.047 25V B:2125
JL391
R322 2200
C325 0.1 25V B:2125
(C-26) Q502 GAIN SWITCH
Q502 DTC144EU
R525 10k
R526 10k
(C-9)(B-9) Q311,312 LPF
R314 33k
R315 560
R316 270
R317 180
L311 330µH *3
C323 1000p
C320 220p
C321 4700p B
C322 3300p B
R335 680k
C324 0.1 25V B:2125
R320 XX
JL392
R318 39k
Q310 2SA812
(B-26) Q310 BUFFER
L312 10µH *4
R527 10k
R323 22k
C327 0.047 16V F
R324 6800
R325 8200
Q311 2SC4081
R326 3300
R327 3300
C328 4700p
C329 1000p
C330 47p CH
R328 4700
R329 3300
C331 1500p SL
R331 4700
R330 3300
C332 22p CH
Q312 2SA1576
C245 0.1 25V B:2125
R203 22k
JL407
R204 47k
IC200 (E-15)
DRUM FG/PG CAPSTAN FG AMP
IC200 CX20115A
Q212 MT1US-T109
R252 4700
R251 2.2k
R253 47k
R200 470k
C200 10 6.3V :TA
JL385
JL386
C246 0.1 16V F
C202 2.2 16V :TA
(E-15) Q212 CFG AMP
JL360
JL361
JL362
JL363
D FG
D PG
FG/PG COM
GND
CN201 4P
TO MECHANISM BLOCK M901 DRUM MOTOR
(See Page 213)
JL364
JL365
JL366
C FG GND
C FG VCC
C FG (+)
C FG (-)
W004 15P 1.0
09


8
9
10
11
12
13
14
15
16
17
18
19
(See Page 181)
TO PC-52P BOARD CN307
TO SS-146P BOARD (2/3) (MODE CONTROL BLOCK)
W002 22P 1.0MM
AFM 5V
AFM GND
HD INSERT
DUB AREA
RF SWP
H SYNC
BL SWP
PCM INH
AF REC
SCK
DATA TO MASTER
DATA TO SLV
VA PB MODE
SYSTEM RESET
REC ATF
N.C.
SYSTEM SYNC
FE RS
FE RA
SP/LP
MONO/STE DET
C1 SS 5V
C2 SS GND
C3 VI 5V
C4 VI GND
C5 AUDIO GND
C6 AUDIO 5V
(B-16) Q005 LED DRIVE
Q005 DTC114EU
X001 16MHz
(C-15) IC001 CXP80116 SERVO MECHANISM CONTROL
(D-21) Q211 INVERTER
Q211 DTC144EU
(E-12) IC201 DRUM MOTOR DRIVE
IC201 CX20114
Q201 2SA812
(E-25) Q201 STARTER
(D-13) Q200 INVERTER
Q200 DTA144EU
(A-8)(A-13) Q006,007 5V REG
Q006 2SB1202
Q007 2SC4081
IC003 (B-13)
①-③ CLOG DET
⑤-⑦ VOLTAGE ERROR AMP
IC003 LM358MR
(B-22) Q501 INVERTER
Q501 2SC4081
(D-14) IC203
①-③ LPF
⑤-⑦ INTEGRATOR
IC203 μPC358G2
IC202 CXA1127MTP
IC202 (H-16) CAPSTAN MOTOR DRIVE
D204 DTZ5.6
(F-17) Q010 INVERTER
Q010 FMG5
(E-19) D005 DAN202U
Q013 (D-15) DC REFERENCE
(E-16) Q014 PB RF DETECT
Q014 2SC4081
Q013 IMX1
Q021 DTC144E
(B-12) Q202 PROTECTION DETECT
Q202 2SC4081
(B-11) Q203 DRUM ACCEL SW
Q203 DTA144EU
(D-11)(D-24) Q213,214 MOTOR UNREG SWITCH
Q214 DTA144EU
Q213 DTC144EU
(B-24) D202 MA151WA
Q204 DTC124EU
Q205 DTC124EU
Q206 2SC1623
IC204 MB3775PF
(B-23) Q206 PROTECTION DETECT
(B-11) Q205 DRUM BRAKE SW
(B-12) Q204 PROTECTION SWITCH
IC204 PULSE WIDT MODULATIO
no mark : REC / PB
( ) : REC mode
〈 〉 : PB mode
* : impossibl voltage o
SS-14
C FG GND
C FG VCC
C FG (+)
C FG (-)
CAP W
CAP U
HE GND
VHE (+)
HE VCC
UHE (+)
UHE (-)
CAP V
WHE (+)
WHE (-)
TO MECHANISM BLOCK M902 CAPSTAN MOTOR
(See Page 213)
CN202 4P
DRUM U
DRUM V
DRUM COM
DRUM W
TO MECHANISM BLOCK M901 DRUM MOTOR
(See Page 213)
CN501 1.5MM
MOTOR UNREG
MOTOR UNREG
UNREG GND
UNREG GND
TO FU-70P BOARD CN604
(See Page 222)


(See Page 181)
TO PC-52P BOARD CN307
(See Page 174)
TO SS-146P BOARD (2/3) (MODE CONTROL BLOCK)
TO VI-100 BOARD W404
(See Page 145)
W001 34P
(G-10) Q023,030 (D-17) SWITCH
(F-17) Q010 INVERTER
(B-27)(A-27) Q020,021 DI DOP GENERATOR
Q013 (D-15) DC REFERENCE
(E-16) Q014 PB RF DETECT
IC005 DI DOP (C-27) GENERATOR
(B-12) Q202 PROTECTION DETECT
(B-11) Q203 DRUM ACCEL SW
(D-11)(D-24) Q213,214 MOTOR UNREG SWITCH
(D-11)(D-11) Q208,207 DRUM PWM DRIVE
(C-24)(C-24) Q209,210 PWM POWER DRIVE
IC204 MB3775PF
FREQUENCY
(B-23) Q206 PROTECTION DETECT
(B-11) Q205 DRUM BRAKE SW
(B-12) Q204 PROTECTION SWITCH
IC204 (C-11) PULSE WIDTH MODULATION

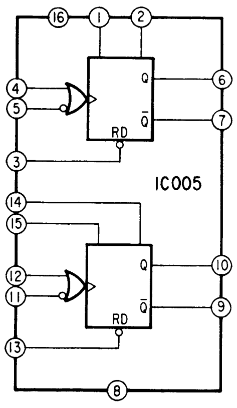
no mark : REC / PB mode
( ) : REC mode
< > : PB mode
* : impossible to measure the voltage of the marked points.

SS-146P BOARD (3/3) (SERVO BLOCK)

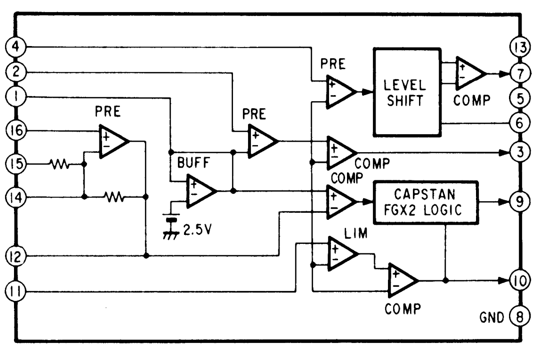
- All resistors are in ohms, 1/16W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .
- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			⊃⟩⟩
Capstan servo (speed and phase)		➤⟩⟩	
Ref. signal	➤		⊃

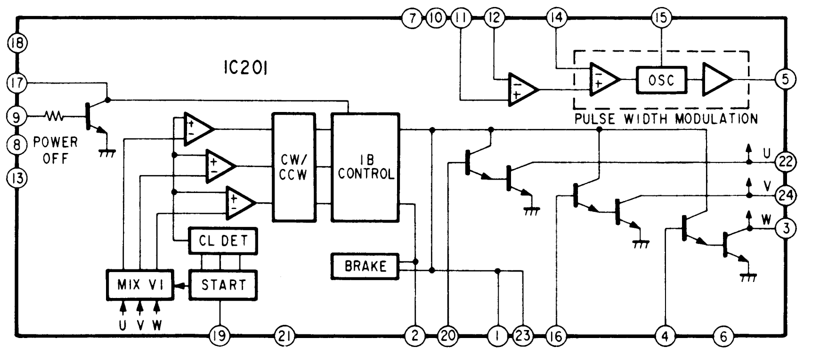
IC005 MC14538BF



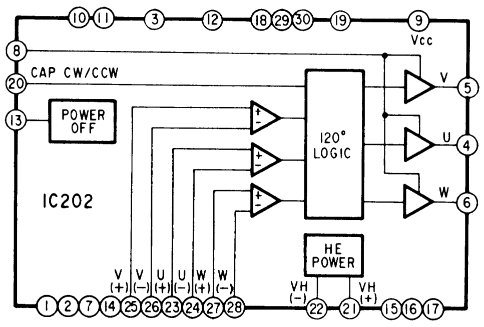
IC200 CX20115A


PRE
LEVEL SHIFT
COMP
PRE
PRE
BUFF
COMP
CAPSTAN FGX2 LOGIC
LIM
COMP
2.5V
GND

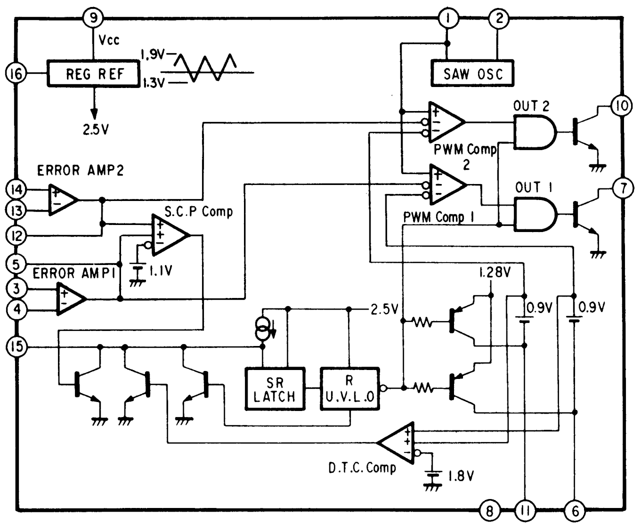
IC201 CX20114


IC201
OSC
PULSE WIDTH MODULATION
POWER OFF
CW/CCW
1B CONTROL
CL DET
MIX VI
START
BRAKE
U V W

IC202 CXA1127M

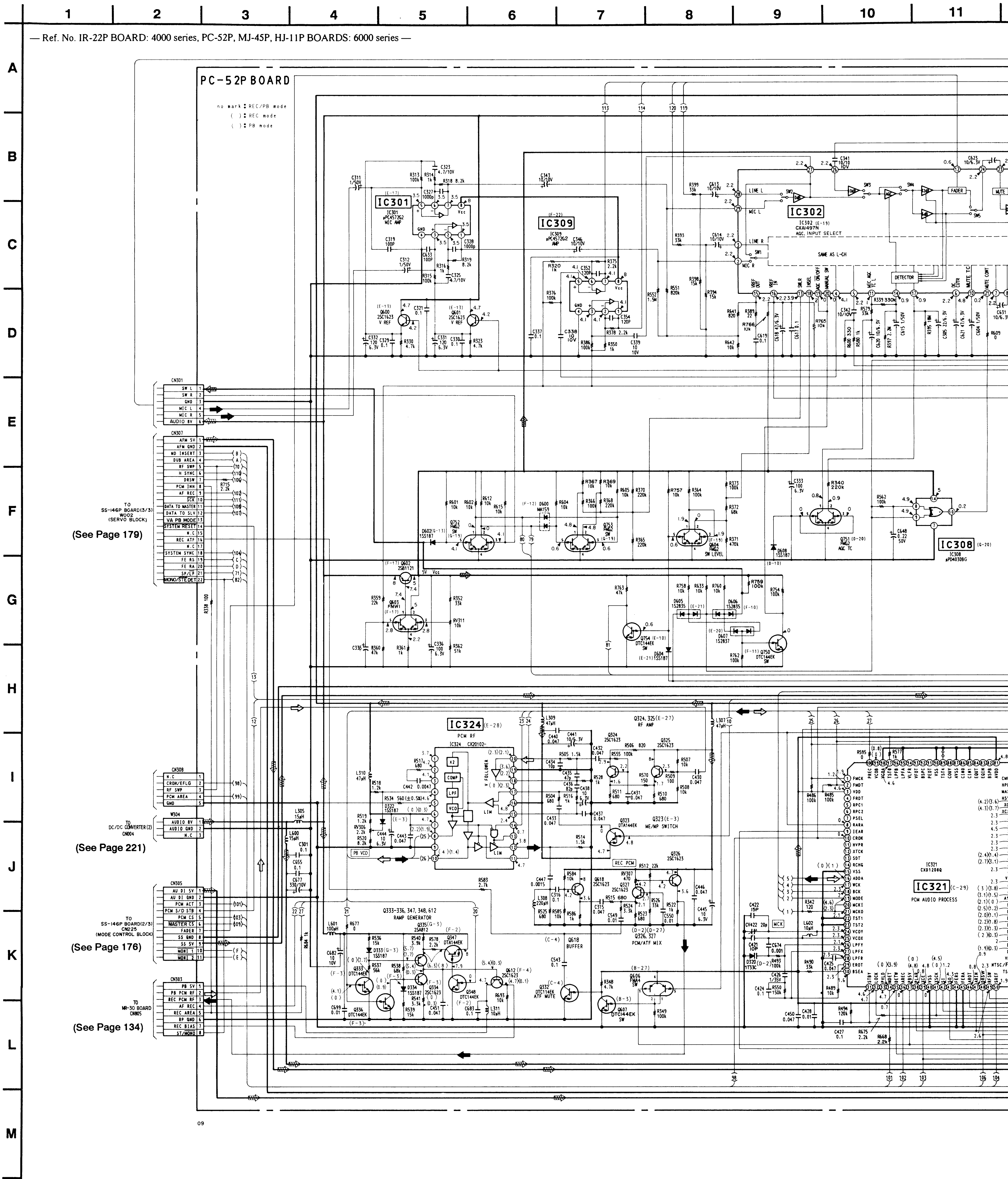

Vcc
CAP CW/CCW
POWER OFF
120° LOGIC
IC202
HE POWER
V U W
VH(−) VH(+)

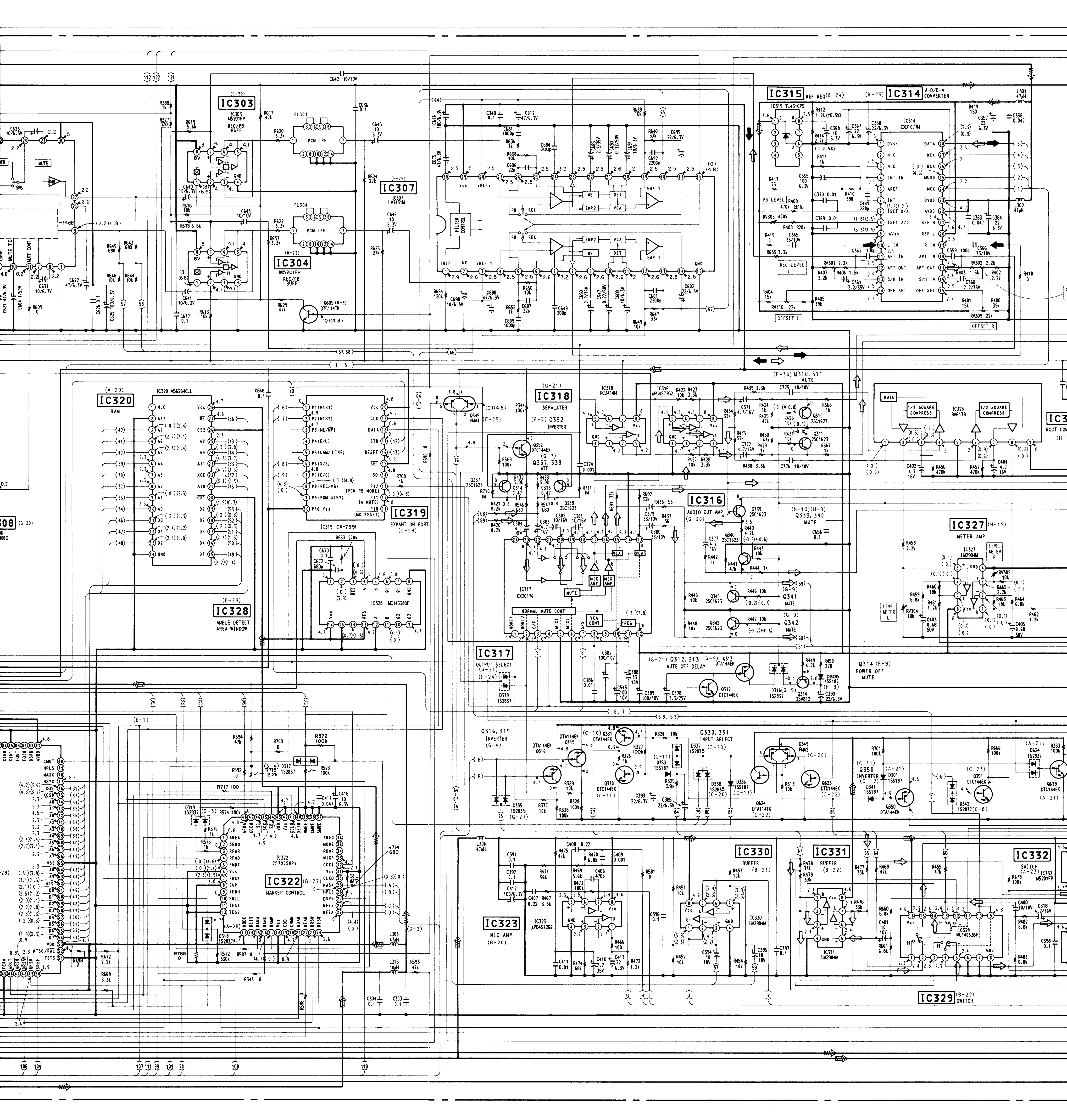
IC204 MB3775PF

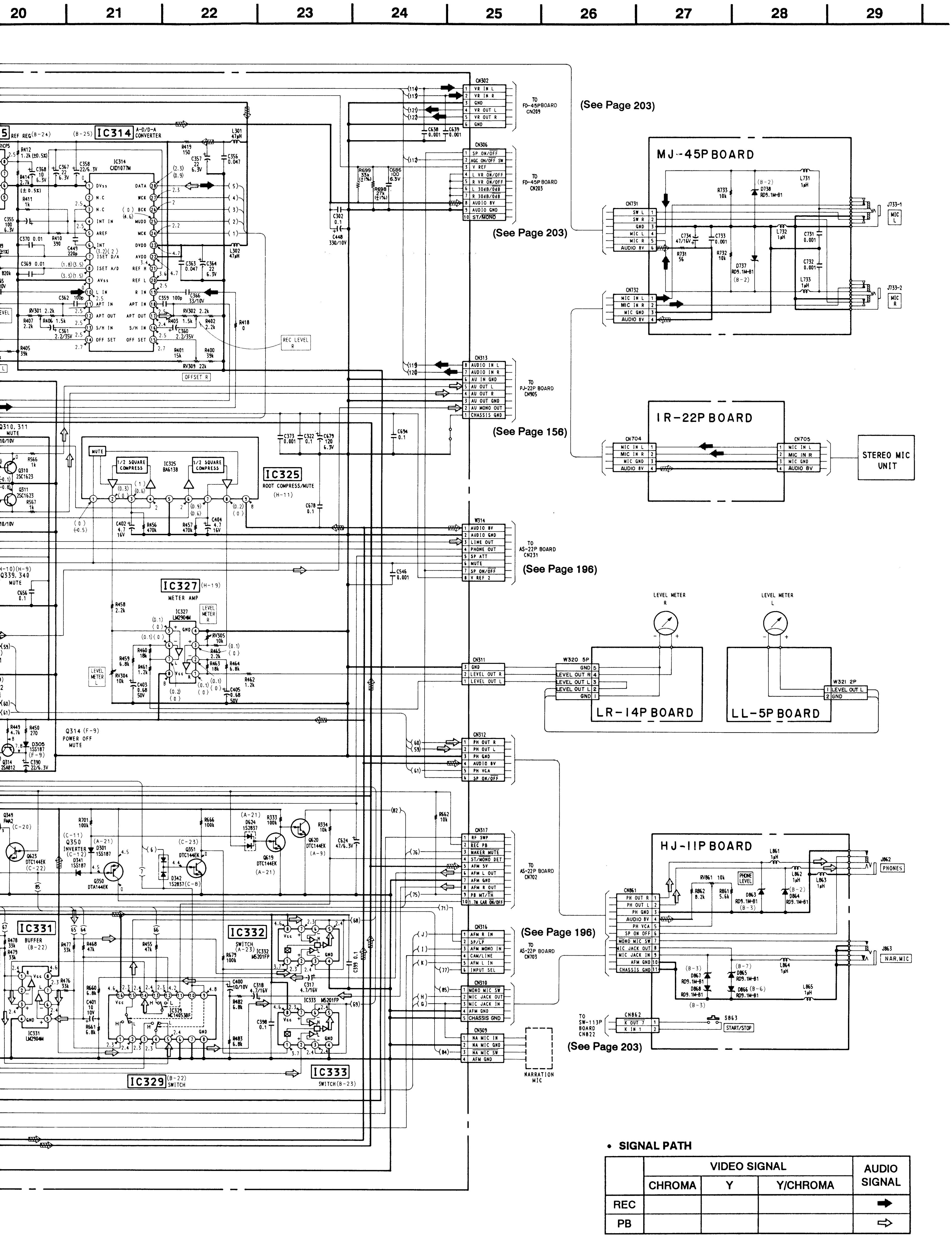

Vcc
REG REF
1.9V
1.3V
SAW OSC
2.5V
OUT 2
PWM Comp 2
ERROR AMP2
OUT 1
PWM Comp 1
S.C.P Comp
ERROR AMP1
1.1V
1.28V
2.5V
0.9V
0.9V
SR LATCH
R U.V.L.O
D.T.C.Comp
1.8V

PC-52P (PCM AUDIO PROCESS), MJ-45P (L/R MIC JACK), HJ-11P (PHONE/NAR. MIC), IR-22P (RELAY), LL-5P (L LEVEL METER), LR-14P (R LEVEL METER) SCHEMATIC D

— Ref. No. IR-22P BOARD: 4000 series, PC-52P, MJ-45P, HJ-11P BOARDS: 6000 series —


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
PC-52P BOARD
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
IC301
IC301 μPC4572G2 MIC AMP
IC309
IC309 μPC4572G2 AMP
IC302
IC302 CXA1497N AGC, INPUT SELECT
SAME AS L-CH
DETECTOR
FADER
MUTE
IC308
IC308 μPD4030BG
IC324
PCM RF
IC324 CX20102
Q324, 325 RF AMP
Q323 ME/MP SWITCH
Q326, 327 PCM/ATF MIX
Q333-336, 347, 348, 612 RAMP GENERATOR
Q618 BUFFER
Q332 ATF MUTE
IC321
IC321 CXD1208Q
PCM AUDIO PROCESS
CN301
SW L
SW R
GND
MIC L
MIC R
AUDIO 8V
CN307
AFM 5V
AFM GND
MD INSERT
DUB AREA
RF SWP
H SYNC
DRSW
PCM INH
AF REC
SCK
DATA TO MASTER
DATA TO SLV
VA PB MODE
SYSTEM RESET
N.C
REC ATF
N.C
SYSTEM SYNC
FE RS
FE RA
SP/LP
MONO/STE.DET
TO SS-146P BOARD(3/3) W002 (SERVO BLOCK)
(See Page 179)
CN308
N.C
CROK/EFLG
RF SWP
PCM AREA
GND
W304
AUDIO 8V
AUDIO GND
N.C
TO DC/DC CONVERTER(2) CN004
(See Page 221)
CN305
AU DI 5V
AU DI GND
PCM ACT
PCM S/D STB
PCM CS
MASTER CS
FADER
SS GND
SS 5V
MONI 1
MONI 2
TO SS-146P BOARD(2/3) CN225 (MODE CONTROL BLOCK)
(See Page 176)
CN303
PB 5V
PB PCM RF
REC PCM RF
AF REC
REC AREA
RF GND
REC BIAS
ST/MONO
TO MR-30 BOARD CN805
(See Page 134)
09


IC303
M5201FP
REC/PB BUFF
IC304
M5201FP
REC/PB BUFF
FL303 PCM LPF
FL304 PCM LPF
IC307
LA7451M
FILTER CONTROL
IC315 REF REG
IC315 TL431CPS
IC314 A-D/D-A CONVERTER
CXD1077M
PB LEVEL
REC LEVEL
OFFSET L
OFFSET R
IC320 RAM
IC320 M56264CLL
IC319 EXPANTION PORT
IC319 CX-7991
IC328 AMBLE DETECT AREA WINDOW
IC328 MC14538BF
IC318 SEPALATER
IC318 RC3414M
Q352 INVERTER
Q337, 338 ATT
IC316 AUDIO OUT AMP
IC316 μPC4572G2
Q310, 311 MUTE
Q339, 340 MUTE
Q341 MUTE
Q342 MUTE
IC317 OUTPUT SELECT
IC317 CX20176
NORMAL MUTE CONT
VCA CONT
Q312, 313 MUTE OFF DELAY
Q314 POWER OFF MUTE
IC325 BA6138
1/2 SQUARE COMPRESS
IC327 METER AMP
IC327 LM2904M
LEVEL METER R
LEVEL METER L
IC322 MARKER CONTROL
IC322 CF73050PV
Q316, 319 INVERTER
Q330, 331 INPUT SELECT
Q350 INVERTER
IC323 MIC AMP
IC323 μPC4572G2
IC330 BUFFER
IC330 LM2904M
IC331 BUFFER
IC331 LM2904M
IC332 SWITCH
IC332 M5201FP
IC329 SWITCH
IC329 MC14053BF


20
21
22
23
24
25
26
27
28
29
IC314 A-D/D-A CONVERTER
IC314 CXD1077M
IC325 ROOT COMPRESS/MUTE (H-11)
1/2 SQUARE COMPRESS
IC325 BA6138
MUTE
IC327 (H-19) METER AMP
IC327 LM2904M
LEVEL METER R
LEVEL METER L
REC LEVEL R
OFFSET R
Q310, 311 MUTE
Q339, 340 MUTE
Q314 (F-9) POWER OFF MUTE
IC331 BUFFER (B-22)
IC331 LM2904M
IC332 SWITCH (A-23)
IC332 M5201FP
IC333 M5201FP
IC333 SWITCH (B-23)
IC329 (B-22) SWITCH
IC329 MC14053BF
Q350 INVERTER
Q350 DTA144EK
Q351 DTC144EK
Q619 DTC144EK
Q620 DTC144EK
CN302
VR IN L
VR IN R
GND
VR OUT L
VR OUT R
GND
TO FD-45P BOARD CN209
(See Page 203)
CN306
SP ON/OFF
AGC ON/OFF SW
V REF
L VR ON/OFF
R VR ON/OFF
L 30dB/0dB
R 30dB/0dB
AUDIO 8V
AUDIO GND
ST/MONO
TO FD-45P BOARD CN203
(See Page 203)
MJ-45P BOARD
CN731
SW L
SW R
GND
MIC L
MIC R
AUDIO 8V
CN732
MIC IN L
MIC IN R
MIC GND
AUDIO 8V
J733-1 MIC L
J733-2 MIC R
CN313
AUDIO IN L
AUDIO IN R
AU IN GND
AU OUT L
AU OUT R
AU OUT GND
AU MONO OUT
CHASSIS GND
TO PJ-22P BOARD CN905
(See Page 156)
IR-22P BOARD
CN704
MIC IN L
MIC IN R
MIC GND
AUDIO 8V
CN705
STEREO MIC UNIT
W314
AUDIO 8V
AUDIO GND
LINE OUT
PHONE OUT
SP ATT
MUTE
SP ON/OFF
V REF 2
TO AS-22P BOARD CN231
(See Page 196)
LEVEL METER R
LEVEL METER L
CN311
GND
LEVEL OUT R
LEVEL OUT L
W320 5P
W321 2P
LR-14P BOARD
LL-5P BOARD
CN312
PH OUT R
PH OUT L
PH GND
AUDIO 8V
PH VCA
SP ON/OFF
CN317
RF SWP
REC PB
MAKER MUTE
ST/MONO DET
AFM 5V
AFM L OUT
AFM GND
AFM R OUT
PB MT/TH
TH CAR ON/OFF
TO AS-22P BOARD CN702
HJ-11P BOARD
CN861
PH OUT R
PH OUT L
PH GND
AUDIO 8V
PH VCA
SP ON OFF
MONO MIC SW
MIC JACK OUT
MIC JACK IN
AFM GND
CHASSIS GND
RV861 10k PHONE LEVEL
J862 PHONES
J863 NAR.MIC
CN316
AFM R IN
SP/LP
AFM MONO IN
CAM/LINE
AFM L IN
INPUT SEL
TO AS-22P BOARD CN703
(See Page 196)
CN310
MONO MIC SW
MIC JACK OUT
MIC JACK IN
AFM GND
CHASSIS GND
CN309
NA MIC IN
NA MIC GND
NA MIC SW
AFM GND
NARRATION MIC
CN862
X OUT 7
X IN 1
TO SW-113P BOARD CN822
(See Page 203)
S863 START/STOP

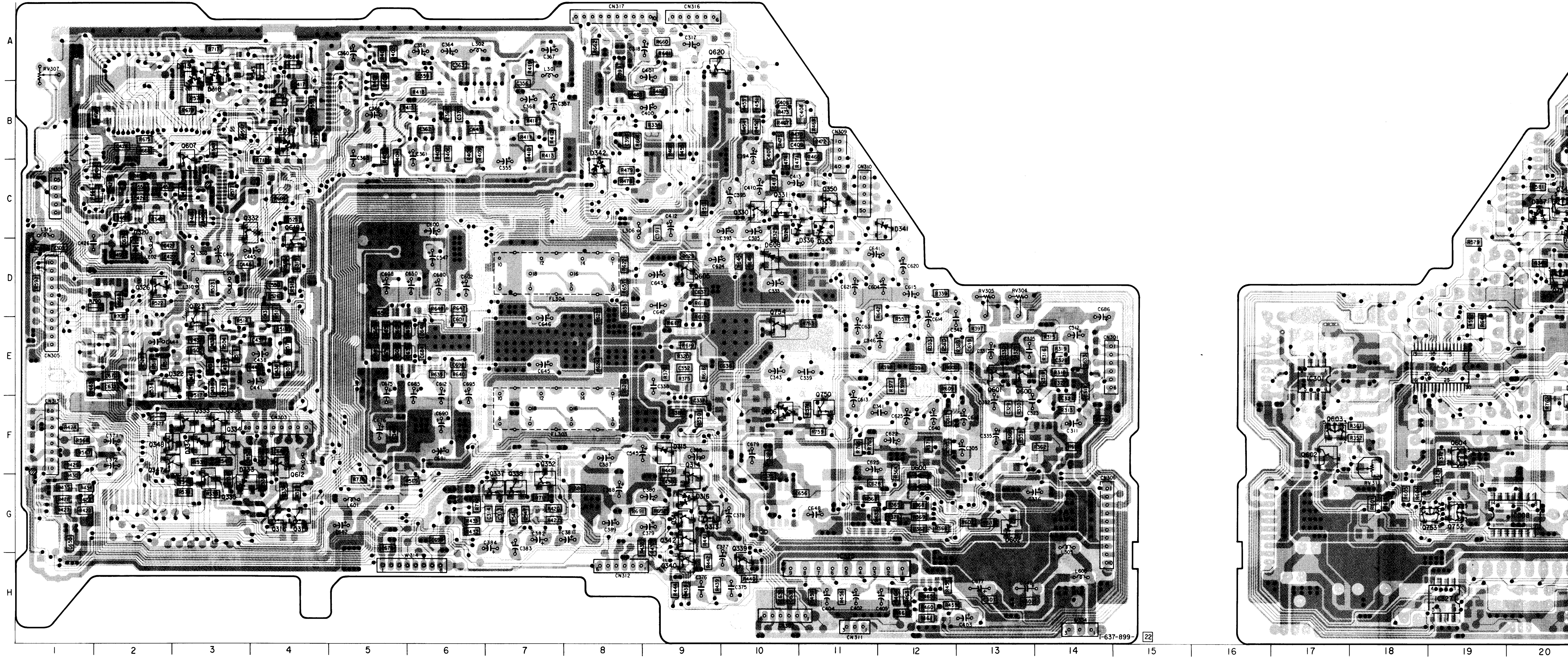
• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

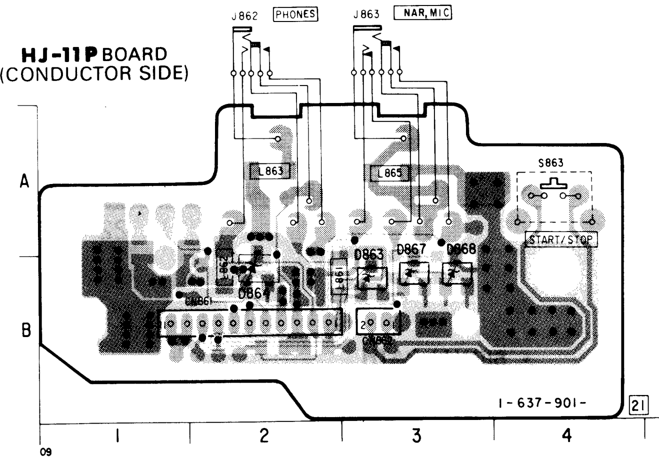
PC-52P (PCM AUDIO PROCESS), MJ-45P (L/R MIC JACK), HJ-11P (PHONE/NAR. MIC), IR-22P (RELAY, REMOTE SENSOR, COMMANDER SWITCH), LL-5P (L LEVEL METER), LR-14P (R LEVEL METER) PRINTED WIRING BOARDS

— Ref. No. IR-22P BOARD: 4000 series, PC-52P, MJ-45P, HJ-11P BOARDS: 6000 series —

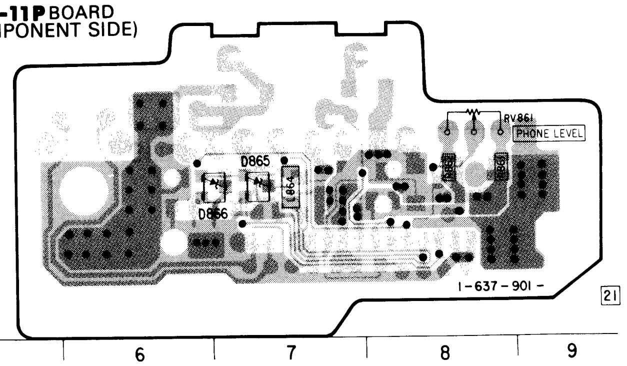
PC-52P BOARD (CONDUCTOR SIDE)


CN317
CN316
CN309
CN310
CN305
CN312
CN311
CN301
RV307
RV305
RV304
FL304
FL303
1-637-899-
22
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

HJ-11P BOARD
(CONDUCTOR SIDE)


J862
PHONES
J863
NAR, MIC
S863
START/STOP
L863
L865
D863
D867
D868
D864
1-637-901-
21
A
B
1
2
3
4

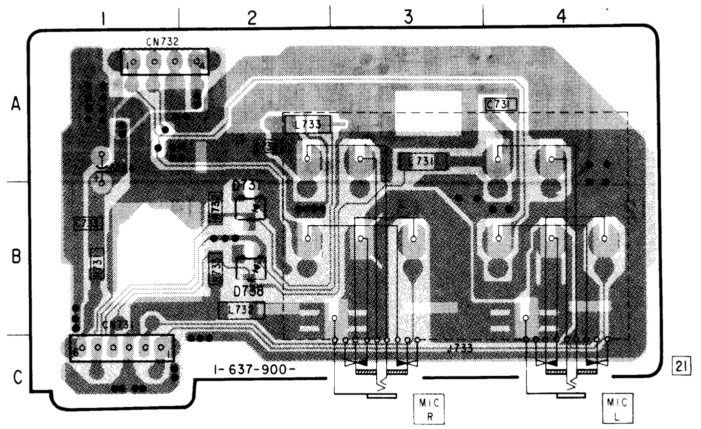
HJ-11P BOARD
(COMPONENT SIDE)


RV861
PHONE LEVEL
D865
D866
1-637-901-
21
5
6
7
8
9

(DIODE)

D863	8-719-106-43	DIODE	RD9. 1M-B1
D864	8-719-106-43	DIODE	RD9. 1M-B1
D865	8-719-106-43	DIODE	RD9. 1M-B1
D866	8-719-106-43	DIODE	RD9. 1M-B1
D867	8-719-106-43	DIODE	RD9. 1M-B1
D868	8-719-106-43	DIODE	RD9. 1M-B1

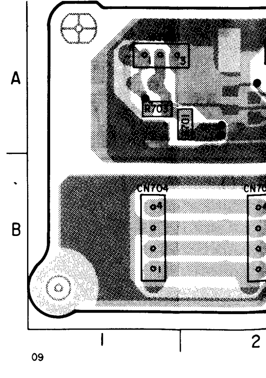
MJ-45P BOARD


CN732
L733
L731
D737
D738
MIC R
MIC L
1-637-900-
21
A
B
C
1
2
3
4

(DIODE)

D737	8-719-106-43	DIODE	RD9. 1M-B1
D738	8-719-106-43	DIODE	RD9. 1M-B1

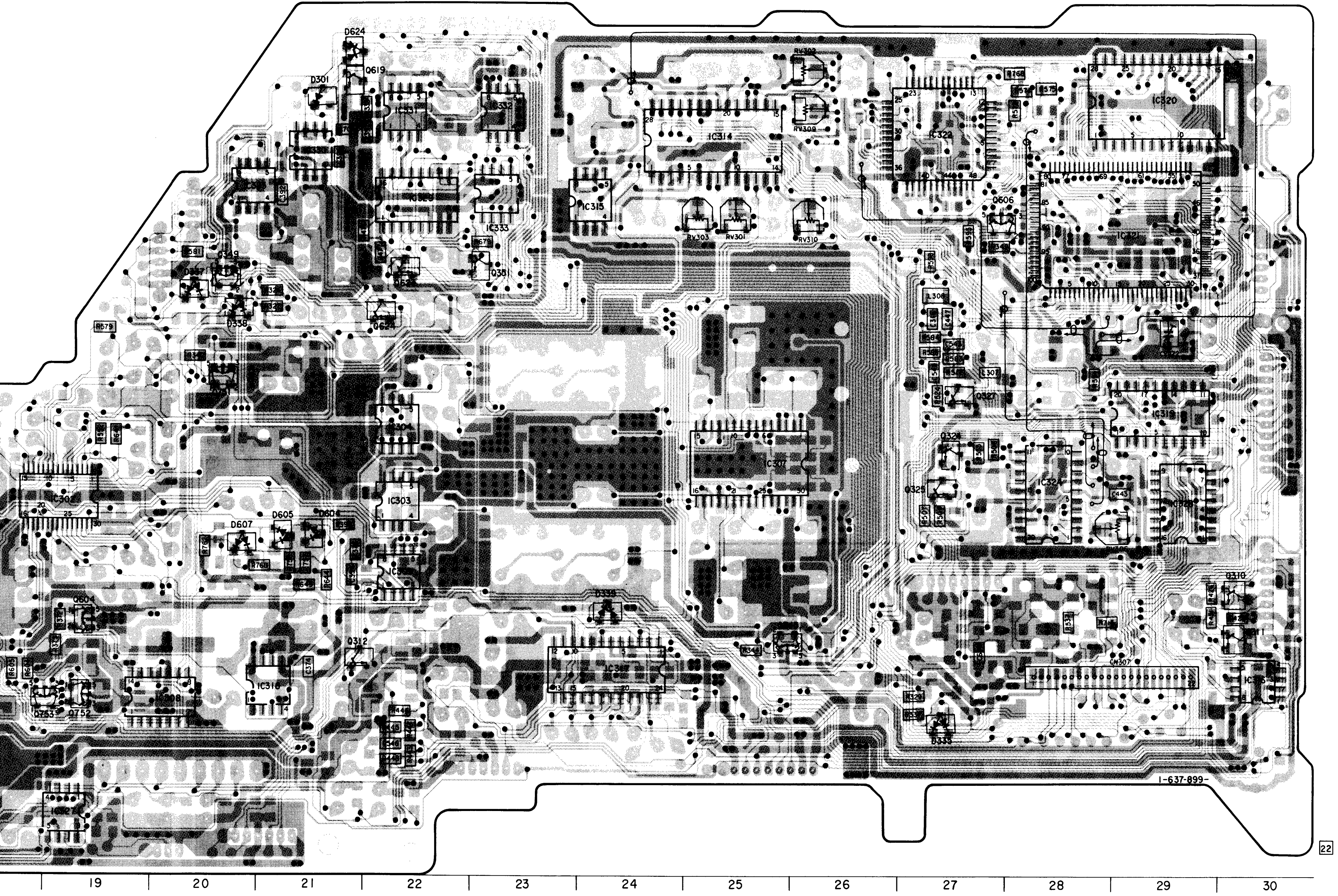
IR-22P BOARD (CONDU



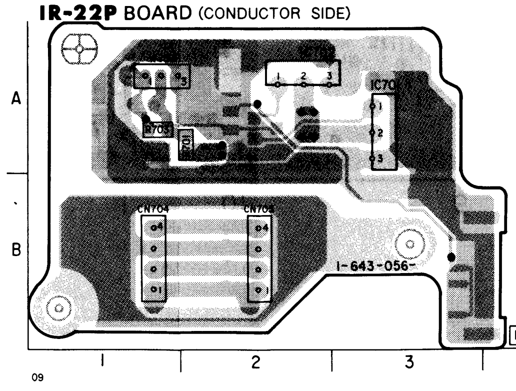
(D

D707 8-719-104-34 DIO

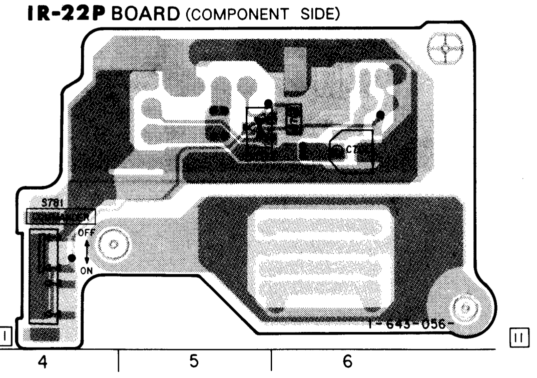
PC-52P BOARD (COMPONENT SIDE)

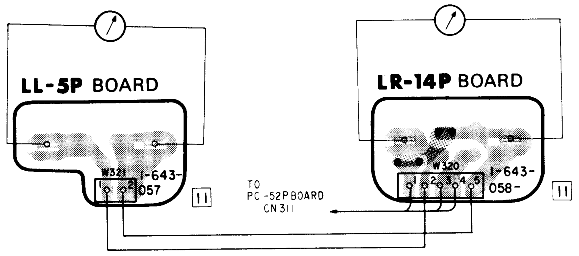


IR-22P BOARD (CONDUCTOR SIDE)



IR-22P BOARD (COMPONENT SIDE)





(DIODE)

D707	8-719-104-34	DIODE	1S2836

(IC)

IC701	8-741-100-64	IC	SBX1621-51
IC702	8-741-100-64	IC	SBX1621-51

(DIODE)

D301	8-719-108-24	DIODE	1SS223
D315	8-719-108-24	DIODE	1SS223
D316	8-719-400-18	DIODE	MA152WK
D317	8-719-400-18	DIODE	MA152WK
D318	8-719-400-18	DIODE	MA152WK
D319	8-719-400-18	DIODE	MA152WK
D320	8-713-300-88	DIODE	1T33C-01
D322	8-719-108-24	DIODE	1SS223
D333	8-719-108-24	DIODE	1SS223
D334	8-719-108-24	DIODE	1SS223
D335	8-719-104-34	DIODE	1S2836
D336	8-719-108-24	DIODE	1SS223
D337	8-719-104-34	DIODE	1S2836
D338	8-719-104-34	DIODE	1S2836
D339	8-719-400-18	DIODE	MA152WK
D341	8-719-108-24	DIODE	1SS223
D342	8-719-400-18	DIODE	MA152WK
D353	8-719-108-24	DIODE	1SS223
D600	8-719-940-45	DIODE	DWA010
D602	8-719-108-24	DIODE	1SS223
D604	8-719-108-24	DIODE	1SS223
D605	8-719-104-34	DIODE	1S2836
D606	8-719-104-34	DIODE	1S2836
D607	8-719-400-18	DIODE	MA152WK
D608	8-719-108-24	DIODE	1SS223
D624	8-719-400-18	DIODE	MA152WK

(IC)

IC301	8-759-111-56	IC	uPC4572G2
IC302	8-759-512-62	IC	CXA1497N
IC303	8-759-603-27	IC	M5201FP
IC304	8-759-603-27	IC	M5201FP
IC307	8-759-822-92	IC	LA7451M
IC308	8-759-509-33	IC	XRU4030BF
IC309	8-759-111-56	IC	uPC4572G2
IC314	8-752-351-52	IC	CXD1077M-T6
IC315	8-759-929-26	IC	TL431CPS
IC316	8-759-111-56	IC	uPC4572G2
IC317	8-752-017-60	IC	CX20176
IC318	8-759-981-82	IC	RC3414M
IC319	8-757-991-00	IC	CX7991
IC320	8-759-507-53	IC	MS6264CLL-15FC
IC321	8-752-332-46	IC	CXD1208Q
IC322	8-759-502-14	IC	CF79050PV
IC323	8-759-111-56	IC	uPC4572G2
IC324	8-752-010-20	IC	CX20102
IC325	8-759-961-38	IC	BA6138
IC327	8-759-981-69	IC	LM2904M
IC328	8-759-009-51	IC	MC14538BF
IC329	8-759-300-71	IC	HD14053BFP
IC330	8-759-981-69	IC	LM2904M
IC331	8-759-981-69	IC	LM2904M
IC332	8-759-603-27	IC	M5201FP
IC333	8-759-603-27	IC	M5201FP

(TRANSISTOR)

Q310	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q311	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q312	8-729-901-01	TRANSISTOR	DTC144EK
Q313	8-729-901-06	TRANSISTOR	DTA144EK
Q314	8-729-216-22	TRANSISTOR	2SA1162-G
Q316	8-729-901-06	TRANSISTOR	DTA144EK
Q319	8-729-901-06	TRANSISTOR	DTA144EK
Q323	8-729-901-06	TRANSISTOR	DTA144EK
Q324	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q325	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q326	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q327	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q330	8-729-901-01	TRANSISTOR	DTC144EK
Q331	8-729-901-06	TRANSISTOR	DTA144EK
Q332	8-729-900-53	TRANSISTOR	DTC114EK
Q333	8-729-901-01	TRANSISTOR	DTC144EK
Q334	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q335	8-729-216-22	TRANSISTOR	2SA1162-G
Q336	8-729-901-01	TRANSISTOR	DTC144EK
Q337	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q338	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q339	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q340	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q341	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q342	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q345	8-729-902-90	TRANSISTOR	FMA4
Q347	8-729-901-06	TRANSISTOR	DTA144EK
Q348	8-729-901-01	TRANSISTOR	DTC144EK
Q349	8-729-904-20	TRANSISTOR	FMA2
Q350	8-729-901-06	TRANSISTOR	DTA144EK
Q351	8-729-901-01	TRANSISTOR	DTC144EK
Q352	8-729-901-01	TRANSISTOR	DTC144EK
Q600	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q601	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q602	8-729-805-25	TRANSISTOR	2SB1121-S
Q603	8-729-903-10	TRANSISTOR	FMW1
Q604	8-729-904-07	TRANSISTOR	FMG2
Q605	8-729-902-XX	TRANSISTOR	DTC114TK-T146
Q606	8-729-902-90	TRANSISTOR	FMA4
Q607	8-729-901-01	TRANSISTOR	DTC144EK
Q612	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q618	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q619	8-729-901-01	TRANSISTOR	DTC144EK
Q620	8-729-901-01	TRANSISTOR	DTC144EK
Q623	8-729-901-01	TRANSISTOR	DTC144EK
Q624	8-729-900-51	TRANSISTOR	DTA114TK
Q750	8-729-901-01	TRANSISTOR	DTC144EK
Q751	8-729-904-07	TRANSISTOR	FMG2
Q752	8-729-904-07	TRANSISTOR	FMG2
Q753	8-729-904-07	TRANSISTOR	FMG2
Q754	8-729-901-01	TRANSISTOR	DTC144EK

AS-22P (AFM AUDIO) PRINTED WIRING BOARD

— Ref. No. AS-22P BOARD: 7000 series —

〈 DIODE 〉

D701	8-719-400-18	DIODE	MA152WK

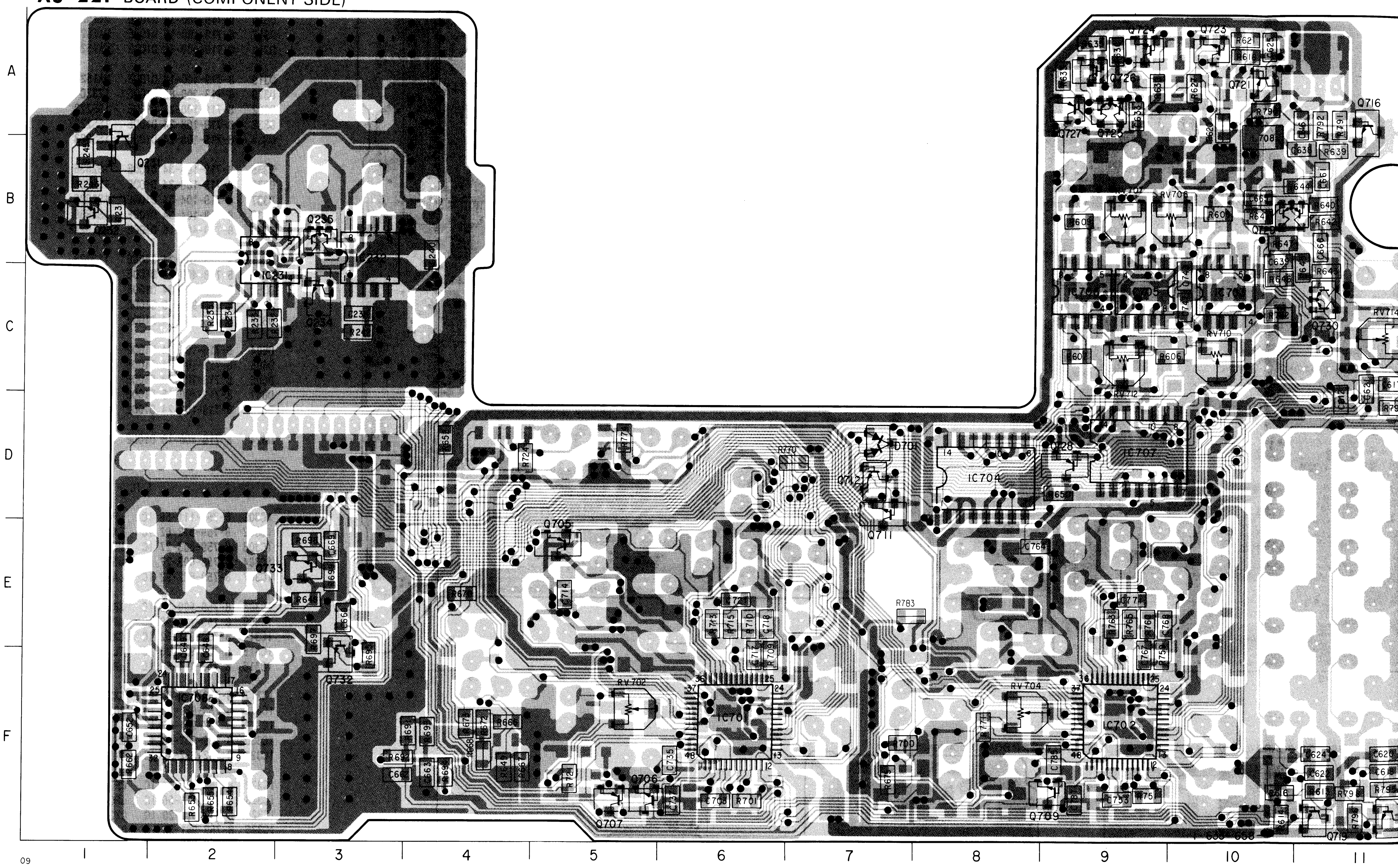
〈 IC 〉

IC231	8-759-603-27	IC	M5201FP
IC232	8-759-701-02	IC	NJM2073M
IC701	8-752-033-01	IC	CXA1237AR
IC702	8-752-033-01	IC	CXA1237AR
IC703	8-759-998-98	IC	LM358D
IC704	8-759-008-67	IC	MC14066BF
IC705	8-759-998-98	IC	LM358D
IC706	8-759-998-98	IC	LM358D
IC707	8-759-008-67	IC	MC14066BF
IC708	8-752-334-42	IC	CXD2106Q

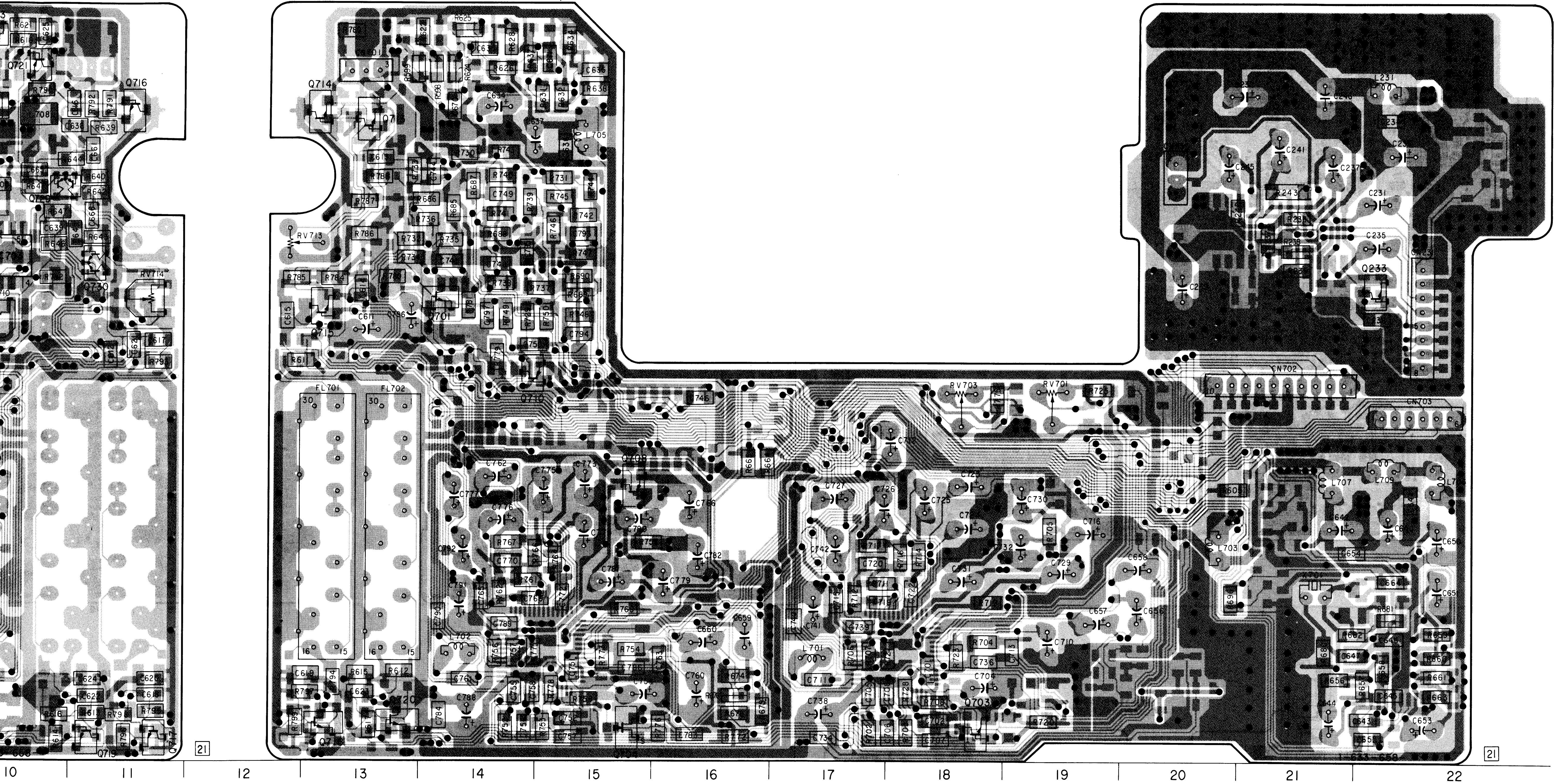
〈 TRANSISTOR 〉

Q231	8-729-805-25	TRANSISTOR	2SB1121-S
Q232	8-729-901-01	TRANSISTOR	DTC144EK
Q233	8-729-901-01	TRANSISTOR	DTC144EK
Q234	8-729-902-XX	TRANSISTOR	DTC114TK-T146
Q235	8-729-902-93	TRANSISTOR	FMG4
Q701	8-729-100-66	TRANSISTOR	2SC1623-L6
Q703	8-729-901-01	TRANSISTOR	DTC144EK
Q704	8-729-220-93	TRANSISTOR	2SK209-G
Q705	8-729-900-51	TRANSISTOR	DTA114TK
Q706	8-729-901-01	TRANSISTOR	DTC144EK
Q707	8-729-901-06	TRANSISTOR	DTA144EK
Q708	8-729-900-51	TRANSISTOR	DTA114TK
Q709	8-729-901-01	TRANSISTOR	DTC144EK
Q710	8-729-901-06	TRANSISTOR	DTA144EK
Q711	8-729-901-01	TRANSISTOR	DTC144EK
Q712	8-729-901-01	TRANSISTOR	DTC144EK
Q713	8-729-100-66	TRANSISTOR	2SC1623-L6
Q714	8-729-100-66	TRANSISTOR	2SC1623-L6
Q715	8-729-901-01	TRANSISTOR	DTC144EK
Q716	8-729-100-66	TRANSISTOR	2SC1623-L6
Q717	8-729-100-66	TRANSISTOR	2SC1623-L6
Q718	8-729-100-66	TRANSISTOR	2SC1623-L6
Q719	8-729-100-66	TRANSISTOR	2SC1623-L6
Q720	8-729-100-66	TRANSISTOR	2SC1623-L6
Q721	8-729-216-22	TRANSISTOR	2SA1162-G
Q723	8-729-100-66	TRANSISTOR	2SC1623-L6
Q724	8-729-100-66	TRANSISTOR	2SC1623-L6
Q725	8-729-903-10	TRANSISTOR	FMW1
Q726	8-729-100-66	TRANSISTOR	2SC1623-L6
Q727	8-729-216-22	TRANSISTOR	2SA1162-G
Q728	8-729-901-06	TRANSISTOR	DTA144EK
Q729	8-729-903-97	TRANSISTOR	FMS1FE
Q730	8-729-903-10	TRANSISTOR	FMW1
Q732	8-729-100-66	TRANSISTOR	2SC1623-L6
Q733	8-729-100-66	TRANSISTOR	2SC1623-L6

AS-22P BOARD (COMPONENT SIDE)



AS-22P BOARD (CONDUCTOR SIDE)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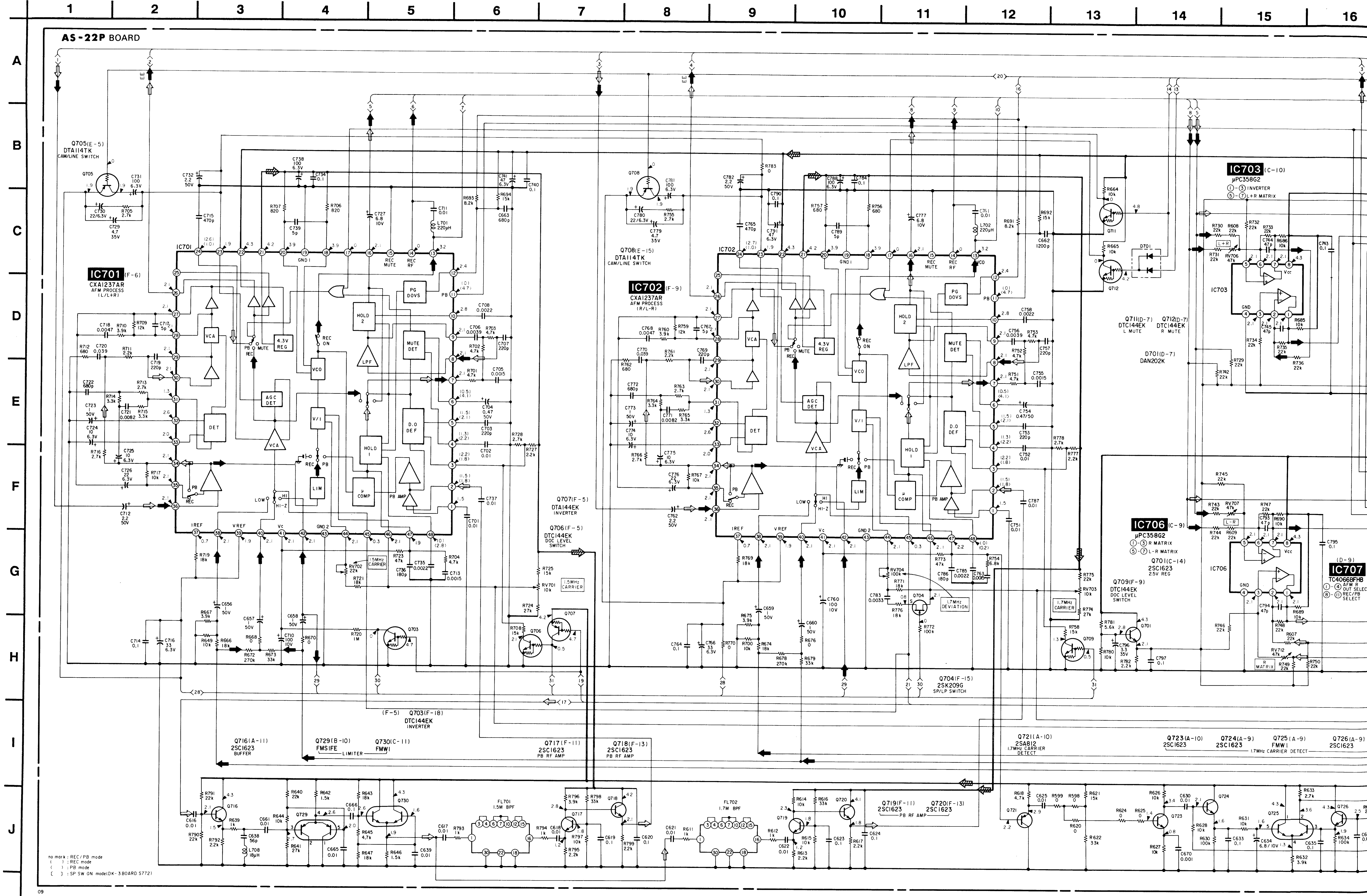
FL701
FL702
RV713
RV714
RV703
RV701
CN702
CN703
Q714
Q716
Q701
Q710
Q715
Q703
Q233
L701
L702
L703
L705
L707
L709
L231

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

AS-22P (AFM AUDIO) SCHEMATIC DIAGRAM

— Ref. No. AS-22P BOARD: 7000 series —



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A
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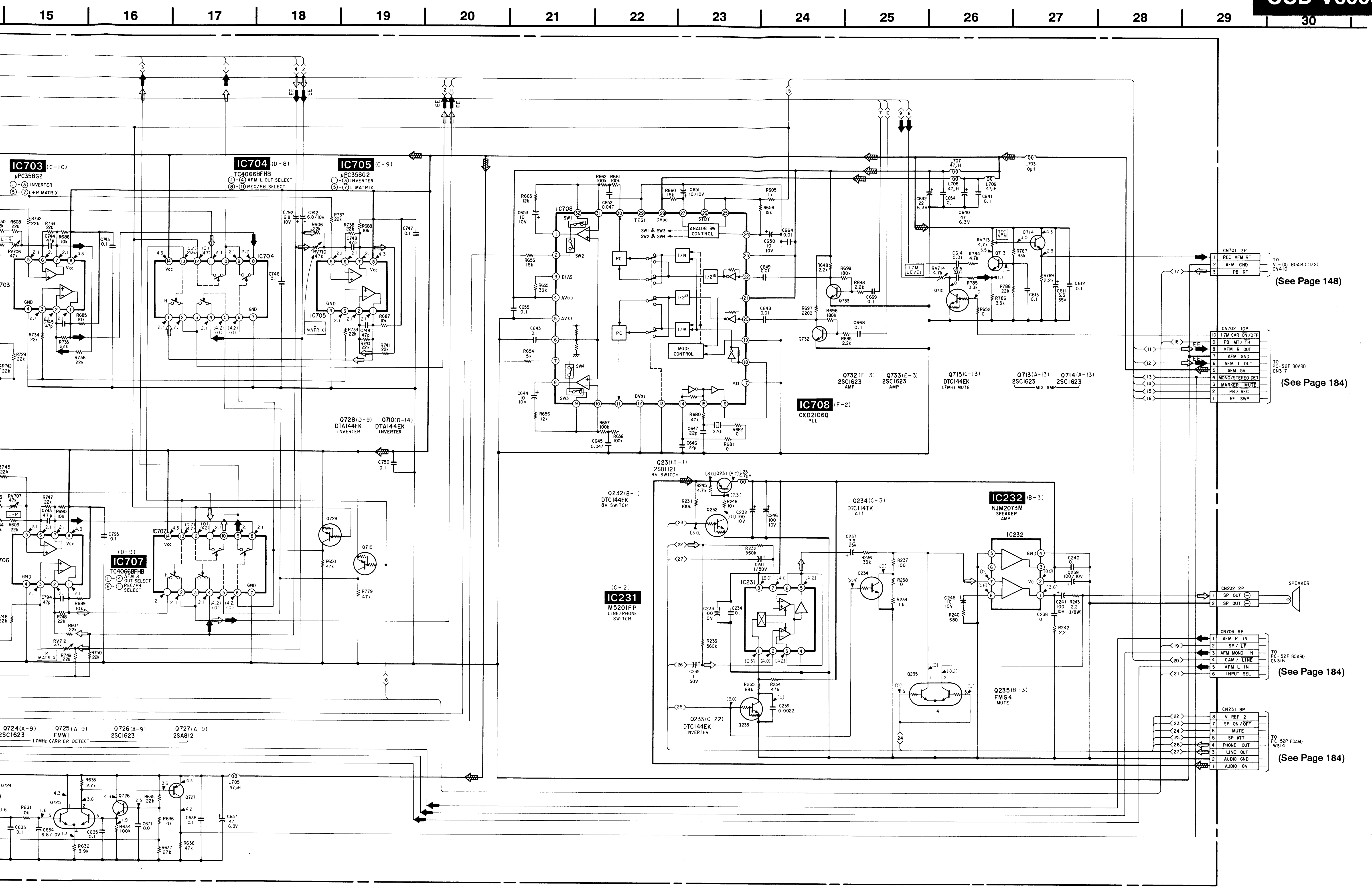
I
J
AS-22P BOARD
Q705(E-5) DTA114TK CAM/LINE SWITCH
IC701 (F-6) CXA1237AR AFM PROCESS (L/L+R)
IC702 (F-9) CXA1237AR AFM PROCESS (R/L-R)
IC703 (C-10) μPC358G2 ①-③ INVERTER ⑤-⑦ L+R MATRIX
IC706 (C-9) μPC358G2 ①-③ R MATRIX ⑤-⑦ L-R MATRIX
IC707 (D-9) TC4066BFHB ①-④ AFM R OUT SELECT ⑧-⑪ REC/PB SELECT
Q708(E-15) DTA114TK CAM/LINE SWITCH
Q707(F-5) DTA144EK INVERTER
Q706(F-5) DTC144EK DOC LEVEL SWITCH
Q711(D-7) DTC144EK L MUTE
Q712(D-7) DTC144EK R MUTE
D701(D-7) DAN202K
Q701(C-14) 2SC1623 2.5V REG
Q709(F-9) DTC144EK DOC LEVEL SWITCH
Q704(F-15) 2SK209G SP/LP SWITCH
(F-5) Q703(F-18) DTC144EK INVERTER
Q716(A-11) 2SC1623 BUFFER
Q729(B-10) FMS1FE
Q730(C-11) FMW1
LIMITER
Q717(F-11) 2SC1623 PB RF AMP
Q718(F-13) 2SC1623 PB RF AMP
Q719(F-11) 2SC1623
Q720(F-13) 2SC1623
PB RF AMP
Q721(A-10) 2SA812 1.7MHz CARRIER DETECT
Q723(A-10) 2SC1623
Q724(A-9) 2SC1623
Q725(A-9) FMW1
Q726(A-9) 2SC1623
1.7MHz CARRIER DETECT
FL701 1.5M BPF
FL702 1.7M BPF
1.5MHz CARRIER
1.7MHz CARRIER
1.7MHz DEVIATION
VCA
DET
AGC DET
V/I
LIM
μ COMP
HOLD 1
HOLD 2
VCO
LPF
MUTE DET
D.O DEF
PG DOVS
4.3V REG
PB AMP
REC MUTE
REC RF
GND 1
GND 2
IREF
VREF
Vc
PB
REC
MUTE
REC ON
LOW
HI
HI-Z
EE
L+R
L-R
R MATRIX
no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
[ ] : SP SW ON mode(DK-3 BOARD S772)
09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IC703 (C-10)
μPC358G2
①-③ INVERTER
⑤-⑦ L+R MATRIX
IC704 (D-8)
TC4066BFHB
①-④ AFM L OUT SELECT
⑧-⑪ REC/PB SELECT
IC705 (C-9)
μPC358G2
①-③ INVERTER
⑤-⑦ L MATRIX
IC708 (F-2)
CXD2106Q
PLL
SW1 & SW3
SW2 & SW4
ANALOG SW CONTROL
MODE CONTROL
BIAS
AVDD
AVSS
TEST
DVDD
STBY
DVss
Vss
Q732 (F-3)
2SC1623
AMP
Q733 (E-3)
2SC1623
AMP
Q715 (C-13)
DTC144EK
1.7MHz MUTE
Q713 (A-13)
2SC1623
Q714 (A-13)
2SC1623
MIX AMP
REC AFM
1.7M LEVEL
Q728 (D-9)
DTA144EK
INVERTER
Q710 (D-14)
DTA144EK
INVERTER
(D-9)
IC707
TC4066BFHB
①-④ AFM R OUT SELECT
⑧-⑪ REC/PB SELECT
L MATRIX
R MATRIX
L+R
L-R
Q231 (B-1)
2SB1121
8V SWITCH
Q232 (B-1)
DTC144EK
8V SWITCH
Q234 (C-3)
DTC114TK
ATT
IC232 (B-3)
NJM2073M
SPEAKER AMP
(C-2)
IC231
M5201FP
LINE/PHONE SWITCH
Q235 (B-3)
FMG4
MUTE
Q233 (C-22)
DTC144EK
INVERTER
Q724 (A-9)
2SC1623
Q725 (A-9)
FMW1
Q726 (A-9)
2SC1623
Q727 (A-9)
2SA812
1.7MHz CARRIER DETECT
L703 10μH
L705 47μH
L707 47μH
L706 47μH
L709 47μH
X701
SPEAKER
CN701 3P
1 REC AFM RF
2 AFM GND
3 PB RF
TO VI-100 BOARD (1/2) CN410
CN702 10P
10 1.7M CAR ON/OFF
9 PB MT/TH
8 AFM R OUT
7 AFM GND
6 AFM L OUT
5 AFM 5V
4 MONO/STEREO DET
3 MARKER MUTE
2 PB/REC
1 RF SWP
TO PC-52P BOARD CN317
CN232 2P
1 SP OUT ⊕
2 SP OUT ⊖
CN703 6P
1 AFM R IN
2 SP/LP
3 AFM MONO IN
4 CAM/LINE
5 AFM L IN
6 INPUT SEL
TO PC-52P BOARD CN316
CN231 8P
8 V REF 2
7 SP ON/OFF
6 MUTE
5 SP ATT
4 PHONE OUT
3 LINE OUT
2 AUDIO GND
1 AUDIO 8V
TO PC-52P BOARD W314

(See Page 148)

(See Page 184)

(See Page 184)

(See Page 184)

FD-45P (CAMERA FUNCTION SWITCH), DK-22P (DIGITAL FUNCTION SWITCH), SW-113P (START/STOP/STANDBY SWITCH) PRINTED WIRING BOARDS

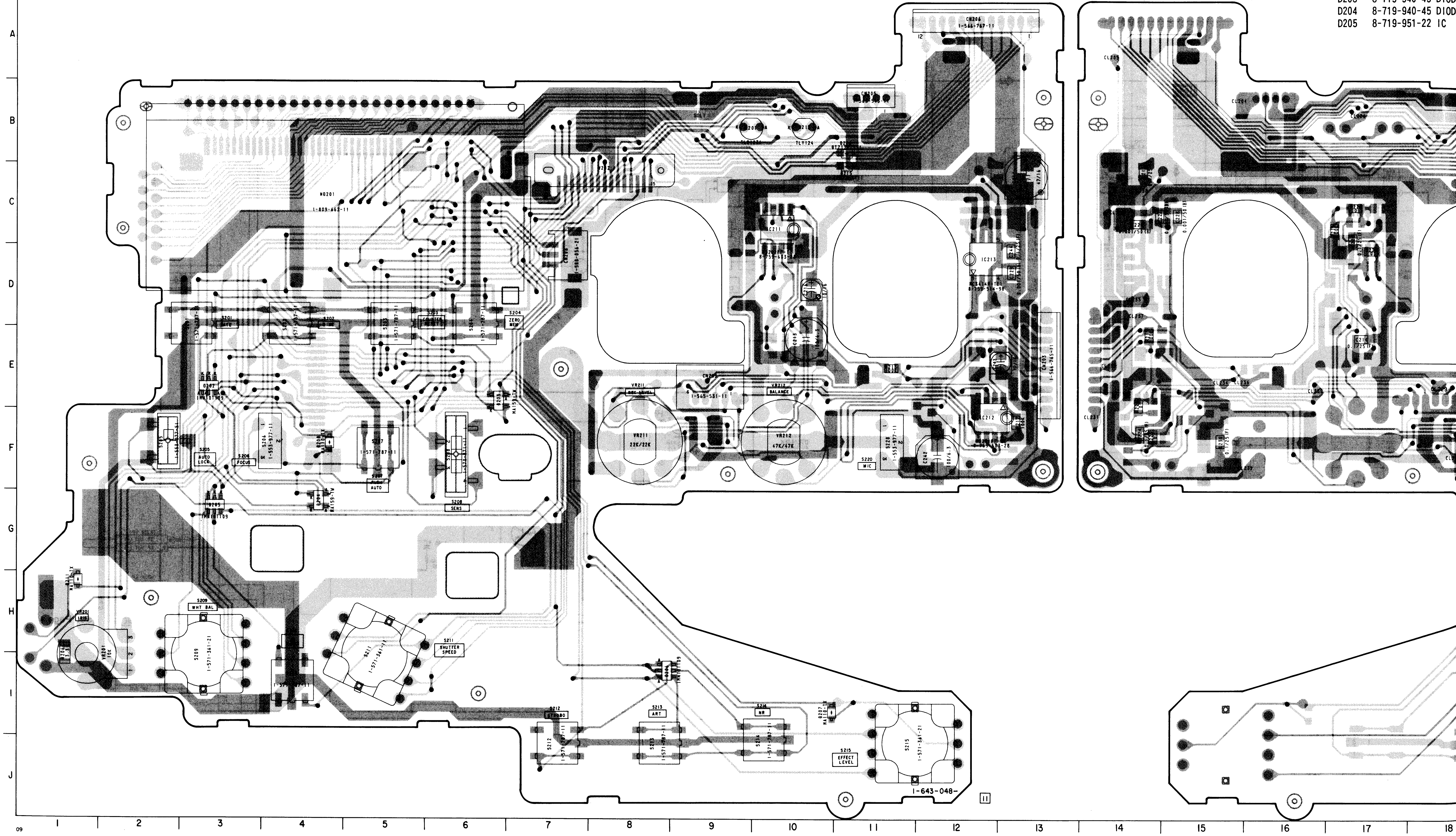
〈 DI

— Ref. No. SW-113P BOARD: 7000 series, FD-45P, DK-22P BOARDS: 8000 series —

D201	8-719-920-05	LED
D202	8-719-951-22	IC
D203	8-719-940-45	DIOD
D204	8-719-940-45	DIOD
D205	8-719-951-22	IC

FD-45P BOARD (COMPONENT SIDE)

FD-45P BOARD (CONDUCTOR SIDE)


A
B
C
D
E
F
G
H
I
J
CN206
1-566-767-11
12
1
CN205
TLY124
M8201
1-809-662-11
IC213
IC212
IC211
S201
AUTO
S202
S203
S204
ZERO MEM
D202
1MA101109
S205
AUTO LOCK
S206
FOCUS
S207
AUTO
S208
SENS
D205
1MA101109
VR211
REC LEVEL
22K/22K
VR212
BALANCE
47K/47K
S220
MIC
C242
CN203
1-566-765-11
VR201
IRIS
S209
WHT BAL
1-571-361-21
S211
SHUTTER SPEED
S212
STROBO
S213
ART
S214
NR
S215
EFFECT LEVEL
1-643-048-
11
CL201
CL204
CL231
09
1
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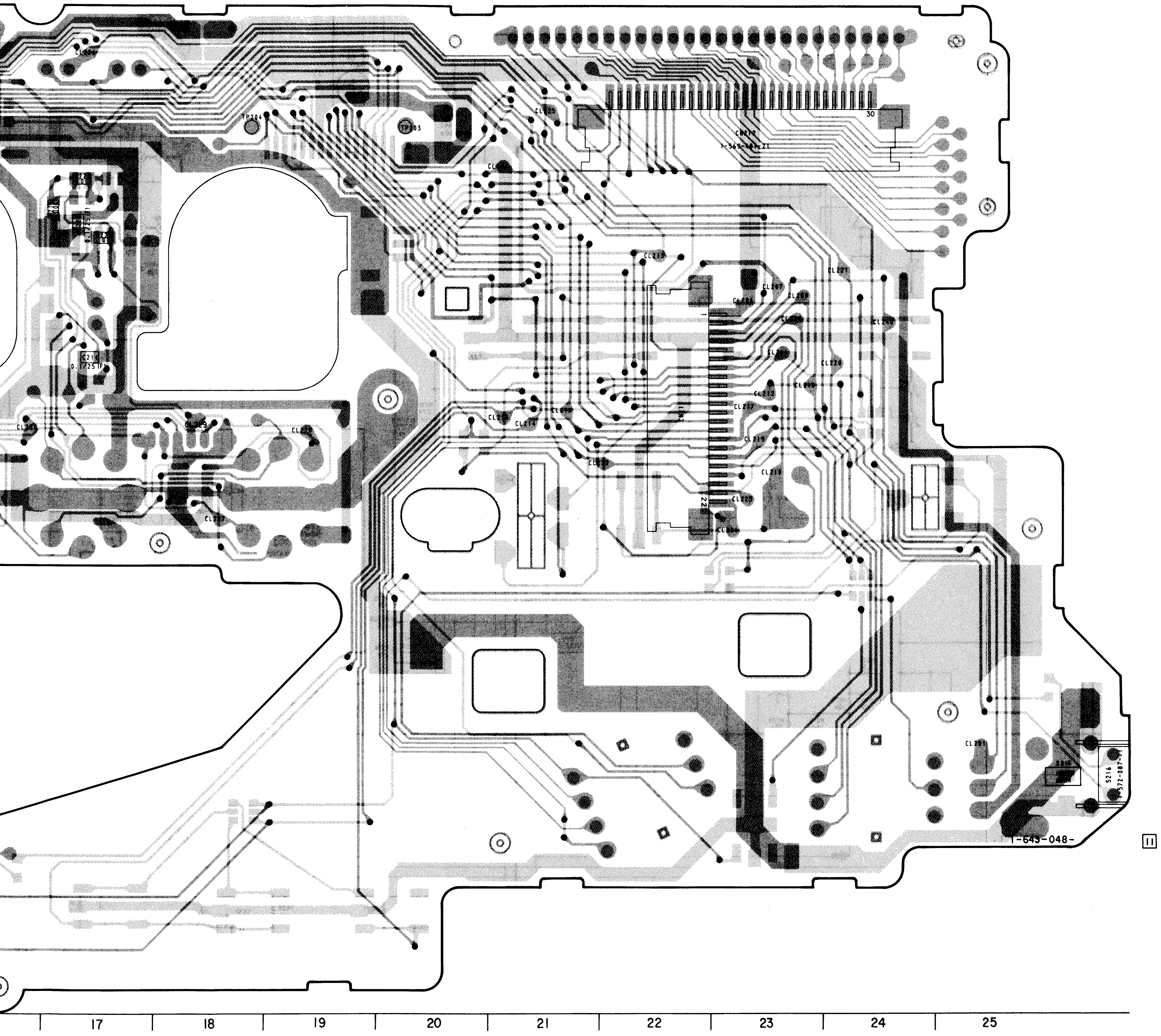
(DIODE)

D201	8-719-920-05	LED	SLP281C-50 (DIGITAL)
D202	8-719-951-22	IC	IMN10 (HI-FI)
D203	8-719-940-45	DIODE	DWA010
D204	8-719-940-45	DIODE	DWA010
D205	8-719-951-22	IC	IMN10
D206	8-719-951-22	IC	IMN10
D207	8-719-404-46	DIODE	MA110
D208	8-719-404-46	DIODE	MA110
D211	8-719-404-46	DIODE	MA110
D212	8-719-938-68	LED	GL-3HY8
D215	8-719-977-34	DIODE	DTZ12
D216	8-719-977-34	DIODE	DTZ12

(IC)

IC211	8-759-603-27	IC	M5201FP
IC212	8-759-603-27	IC	M5201FP
IC213	8-759-981-82	IC	RC3414M



1-643-048-
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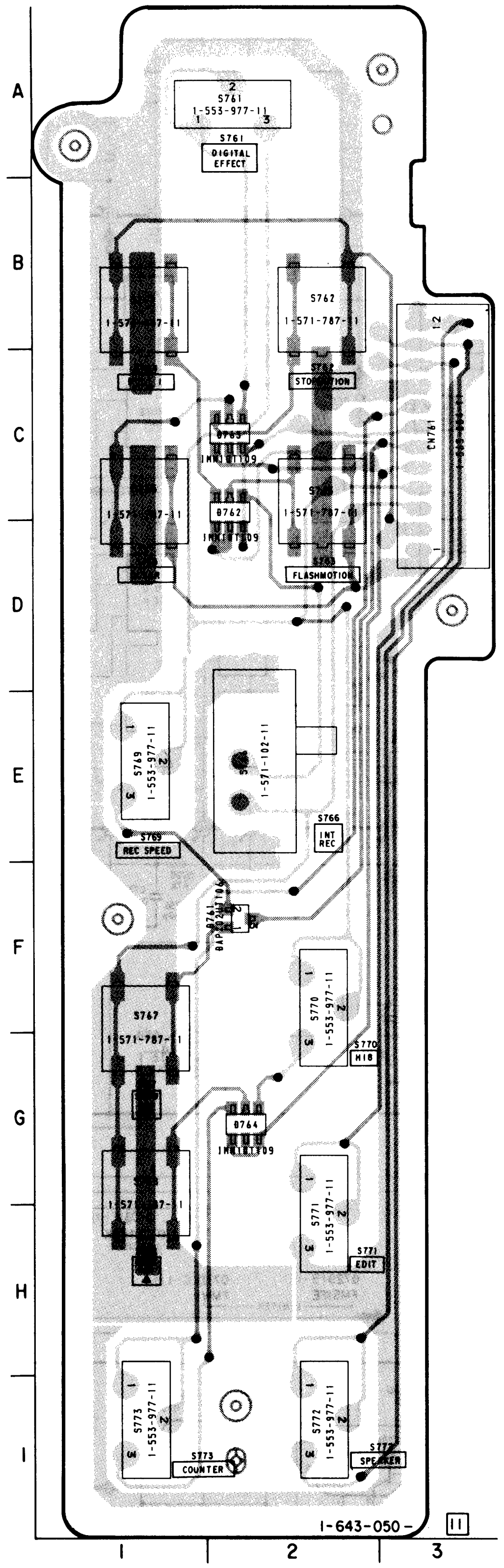
25

(DIODE)

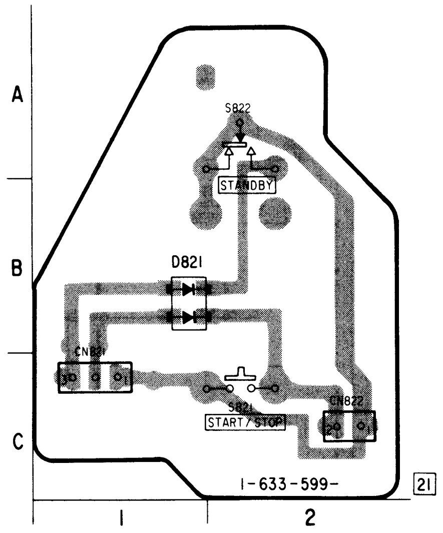
D761	8-719-941-09	DIODE	DAP202U
D762	8-719-951-22	DIODE	IMN10
D763	8-719-951-22	DIODE	IMN10
D764	8-719-951-22	DIODE	IMN10

DK-22P BOARD (COMPONENT SIDE)



A
B
C
D
E
F
G
H
I
S761
DIGITAL EFFECT
S762
STOP MOTION
FLASHMOTION
CN761
S769
REC SPEED
S766
INT REC
S767
S770
S771
EDIT
S773
COUNTER
S772
SPEAKER
D762
D763
D764
1-643-050-
11
1
2
3

SW-113P BOARD



A
B
C
S822
STANDBY
D821
CN821
S821
START/STOP
CN822
1-633-599-
21
1
2

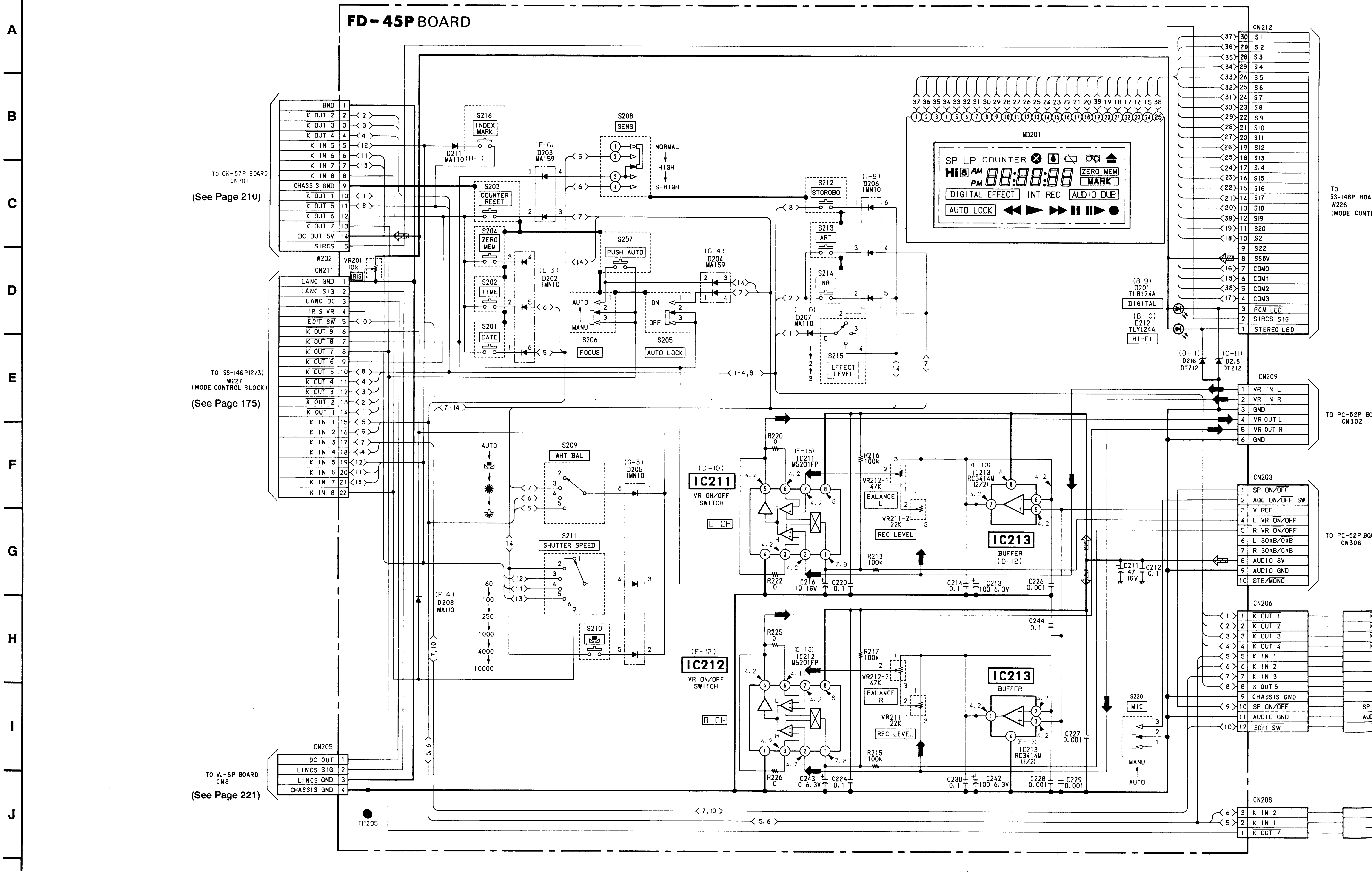
(DIODE)

D821	8-719-940-45	DIODE	DWA010

FD-45P (CAMERA FUNCTION SWITCH), DK-22P (DIGITAL FUNCTION SWITCH), SW-113P (START/STOP/STANDBY SWITCH) SCHEMATIC DIAGRAMS

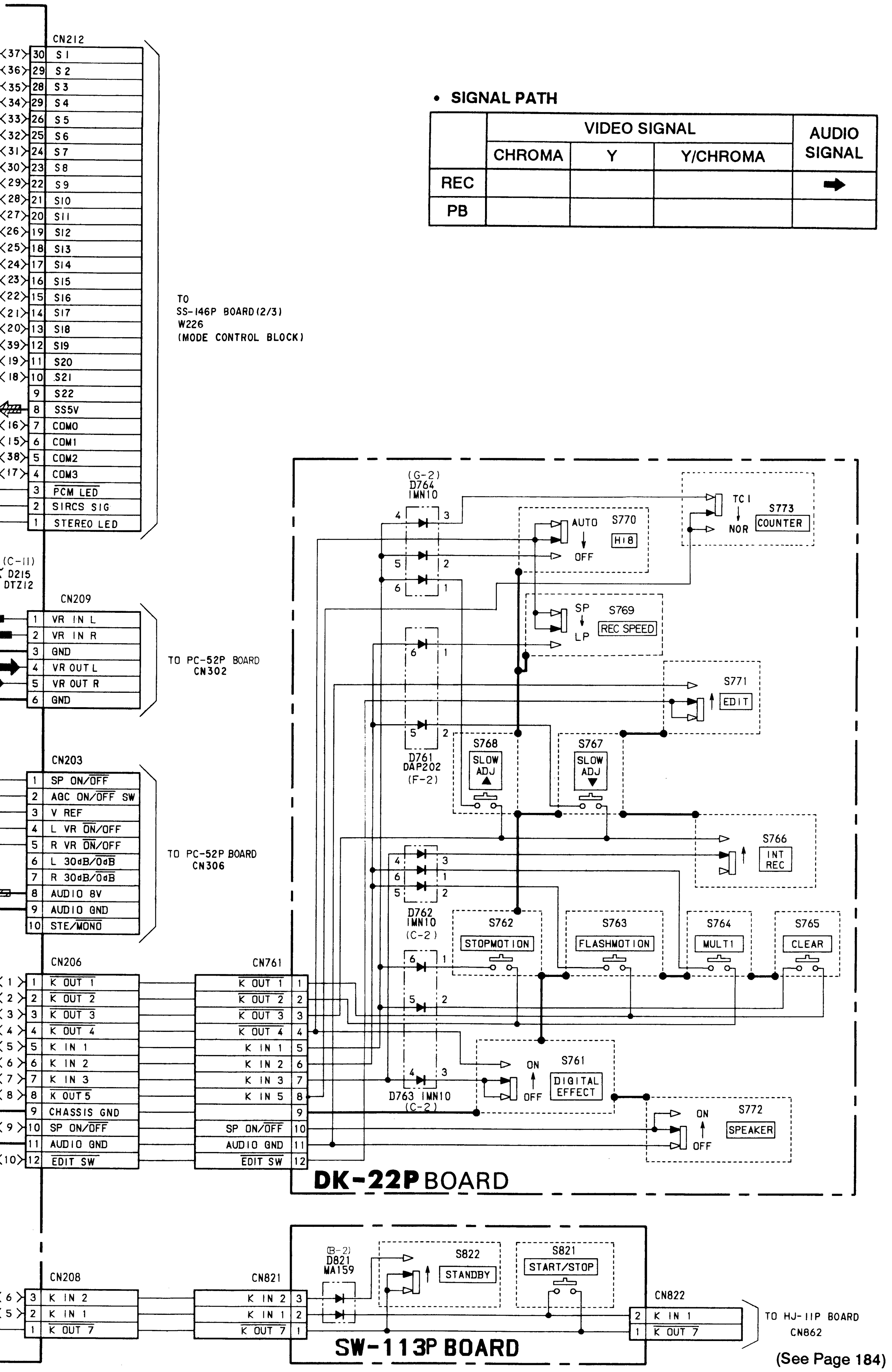
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

— Ref. No. SW-113P BOARD: 7000 series, FD-45P, DK-22P BOARDS: 8000 series —


A
B
C
D
E
F
G
H
I
J
FD-45P BOARD
TO CK-57P BOARD CN701
(See Page 210)
GND
K OUT 2
K OUT 3
K OUT 4
K IN 5
K IN 6
K IN 7
K IN 8
CHASSIS GND
K OUT 1
K OUT 5
K OUT 6
K OUT 7
DC OUT 5V
SIRCS
W202
VR201 10k IRIS
CN211
TO SS-146P(2/3) W227 (MODE CONTROL BLOCK)
(See Page 175)
LANC GND
LANC SIG
LANC DC
IRIS VR
EDIT SW
K OUT 9
K OUT 8
K OUT 7
K OUT 6
K OUT 5
K OUT 4
K OUT 3
K OUT 2
K OUT 1
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
K IN 7
K IN 8
S216 INDEX MARK
D211 MA110 (H-1)
S203 COUNTER RESET
S204 ZERO MEM
S202 TIME
S201 DATE
(F-6) D203 MA159
(E-3) D202 1MN10
S208 SENS
NORMAL
HIGH
S-HIGH
S207 PUSH AUTO
AUTO
MANU
S206 FOCUS
ON
OFF
S205 AUTO LOCK
(G-4) D204 MA159
S212 STOROBO
S213 ART
S214 NR
(I-8) D206 1MN10
(I-10) D207 MA110
S215 EFFECT LEVEL
ND201
SP LP COUNTER
ZERO MEM
MARK
DIGITAL EFFECT
INT REC
AUDIO DUB
AUTO LOCK
(B-9) D201 TLG124A DIGITAL
(B-10) D212 TLY124A HI-FI
(B-11) D216 DTZ12
(C-11) D215 DTZ12
CN212
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 S18 S19 S20 S21 S22
SS5V
COM0
COM1
COM2
COM3
PCM LED
SIRCS SIG
STEREO LED
TO SS-146P BOARD W226 (MODE CONTROL BLOCK)
CN209
VR IN L
VR IN R
GND
VR OUT L
VR OUT R
GND
TO PC-52P BOARD CN302
AUTO
S209 WHT BAL
(G-3) D205 1MN10
S211 SHUTTER SPEED
60
100
250
1000
4000
10000
S210
(F-4) D208 MA110
R220 0
(F-15) IC211 M5201FP
(D-10) IC211 VR ON/OFF SWITCH
L CH
R216 100k
VR212-1 47K
BALANCE L
VR211-2 22K
REC LEVEL
R213 100k
R222 0
C216 10 16V
C220 0.1
(F-13) IC213 RC3414M (2/2)
IC213 BUFFER (D-12)
C214 0.1
C213 100 6.3V
C226 0.001
C211 47 16V
C212 0.1
C244 0.1
CN203
SP ON/OFF
AGC ON/OFF SW
V REF
L VR ON/OFF
R VR ON/OFF
L 30dB/0dB
R 30dB/0dB
AUDIO 8V
AUDIO GND
STE/MONO
TO PC-52P BOARD CN306
R225 0
(E-13) IC212 M5201FP
(F-12) IC212 VR ON/OFF SWITCH
R CH
R217 100k
VR212-2 47K
BALANCE R
VR211-1 22K
REC LEVEL
R215 100k
R226 0
C243 10 6.3V
C224 0.1
IC213 BUFFER
(F-13) IC213 RC3414M (1/2)
C230 0.1
C242 100 6.3V
C228 0.001
C229 0.001
C227 0.001
S220 MIC
MANU
AUTO
CN206
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K IN 1
K IN 2
K IN 3
K OUT 5
CHASSIS GND
SP ON/OFF
AUDIO GND
EDIT SW
CN205
TO VJ-6P BOARD CN811
(See Page 221)
DC OUT
LINCS SIG
LINCS GND
CHASSIS GND
TP205
CN208
K IN 2
K IN 1
K OUT 7

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				


CN212
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
SS5V
COM0
COM1
COM2
COM3
PCM LED
SIRCS SIG
STEREO LED
TO SS-146P BOARD(2/3) W226 (MODE CONTROL BLOCK)
(C-11) D215 DTZ12
CN209
VR IN L
VR IN R
GND
VR OUT L
VR OUT R
GND
TO PC-52P BOARD CN302
CN203
SP ON/OFF
AGC ON/OFF SW
V REF
L VR ON/OFF
R VR ON/OFF
L 30dB/0dB
R 30dB/0dB
AUDIO 8V
AUDIO GND
STE/MONO
TO PC-52P BOARD CN306
CN206
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K IN 1
K IN 2
K IN 3
K OUT 5
CHASSIS GND
SP ON/OFF
AUDIO GND
EDIT SW
CN761
K IN 5
(G-2) D764 IMN10
S770 AUTO OFF HI8
S773 TC1 NOR COUNTER
S769 SP LP REC SPEED
S771 EDIT
D761 DAP202 (F-2)
S768 SLOW ADJ ▲
S767 SLOW ADJ ▼
S766 INT REC
D762 IMN10 (C-2)
S762 STOPMOTION
S763 FLASHMOTION
S764 MULTI
S765 CLEAR
S761 ON OFF DIGITAL EFFECT
D763 IMN10 (C-2)
S772 ON OFF SPEAKER
DK-22P BOARD
CN208
K IN 2
K IN 1
K OUT 7
CN821
(B-2) D821 MA159
S822 STANDBY
S821 START/STOP
CN822
TO HJ-11P BOARD CN862
SW-113P BOARD

(See Page 184)

CK-57P (KEY MATRIX), VK-25P (VTR FUNCTION SWITCH) PRINTED WIRING BOARDS

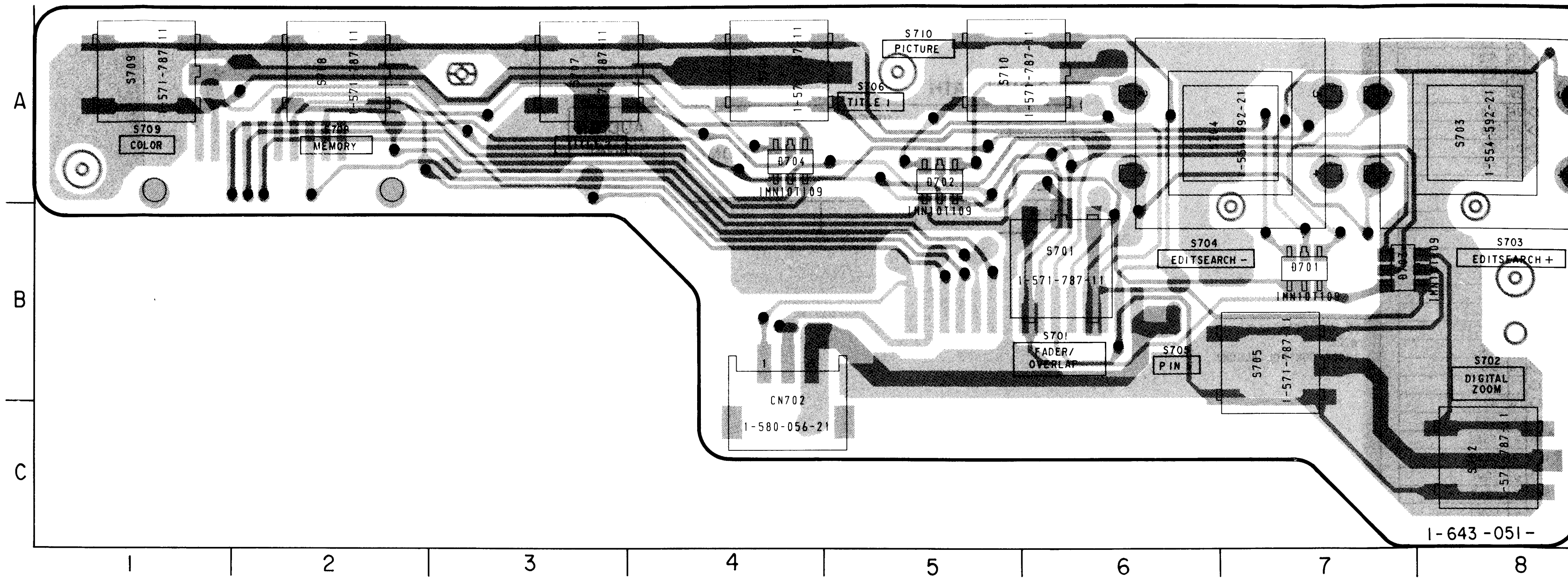
— Ref. No. CK-57P, VK-25P BOARDS: 9000 series —

- IR-22P printed wiring board is shown on page 187 (PCM AUDIO).

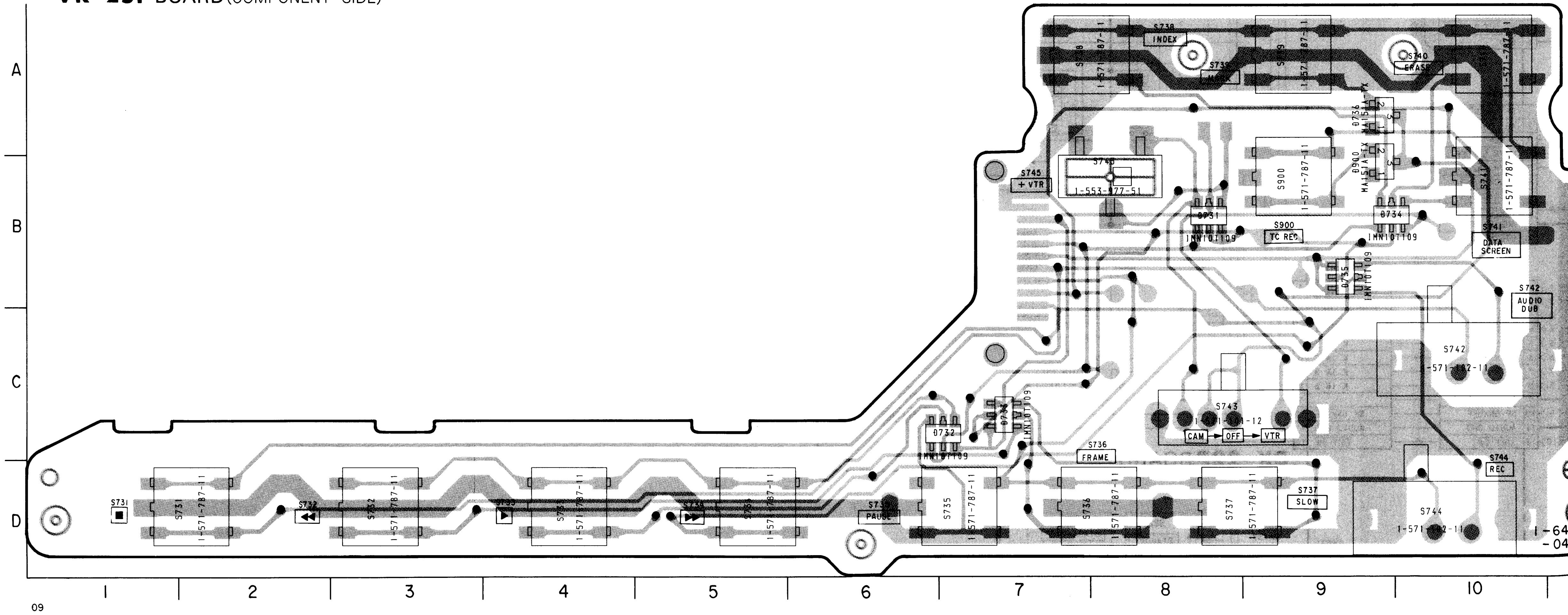
(DIODE)

D701	8-719-951-22	IC	IMN10
D702	8-719-951-22	IC	IMN10
D703	8-719-951-22	IC	IMN10
D704	8-719-951-22	IC	IMN10

CK-57P BOARD (COMPONENT SIDE)


A
B
C
1
2
3
4
5
6
7
8
S709
COLOR
S708
MEMORY
S710
PICTURE
S706
TITLE
D704
IMN10T109
D702
IMN10T109
S701
1-571-787-11
S701
FADER/
OVERLAP
CN702
1-580-056-21
S704
EDITSEARCH −
D701
IMN10T109
S703
EDITSEARCH +
S703
1-554-592-21
S705
S706
PIN
S702
DIGITAL
ZOOM
1-643-051-

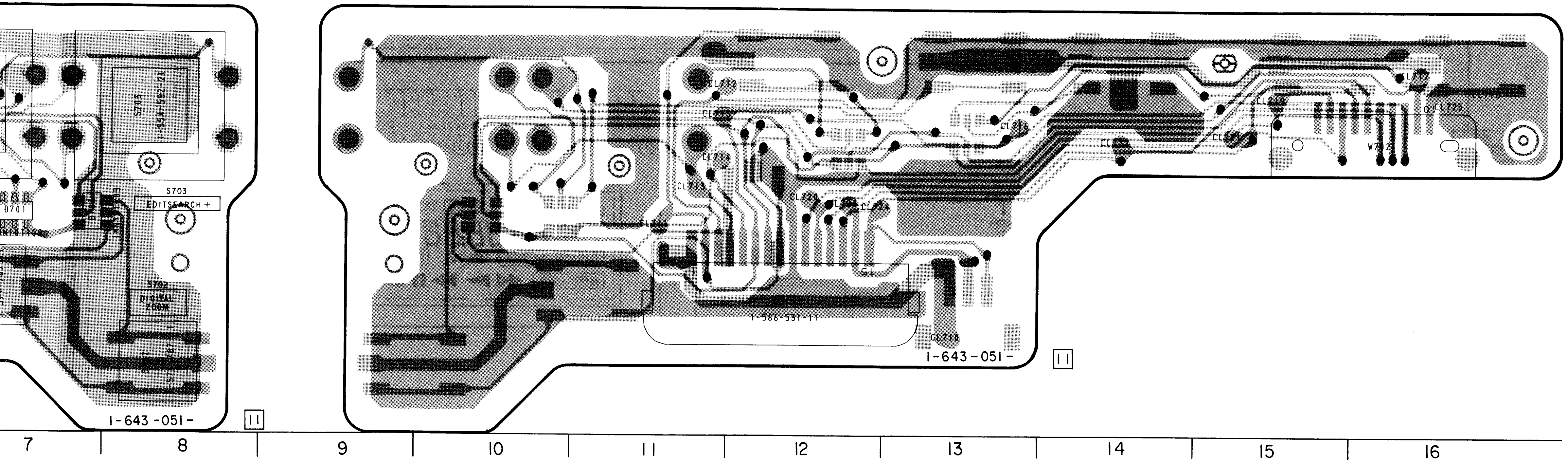
VK-25P BOARD (COMPONENT SIDE)


A
B
C
D
1
2
3
4
5
6
7
8
9
10
S738
INDEX
S739
S740
ERASE
D736
MA151A-TX
D900
MA151A-TX
S745
+VTR
S746
1-553-377-51
D731
IMN10T109
S900
1-571-787-11
S900
TC REC
D734
IMN10T109
S741
1-571-787-11
S741
DATA
SCREEN
D735
IMN10T109
S742
AUDIO
DUB
S742
1-571-132-11
S743
CAM
OFF
VTR
D732
IMN10T109
D733
IMN10T109
S736
FRAME
S744
REC
S744
1-571-132-11
S731
S732
S733
S734
S735
PAUSE
S735
S736
S737
S737
SLOW
1-571-787-11
09

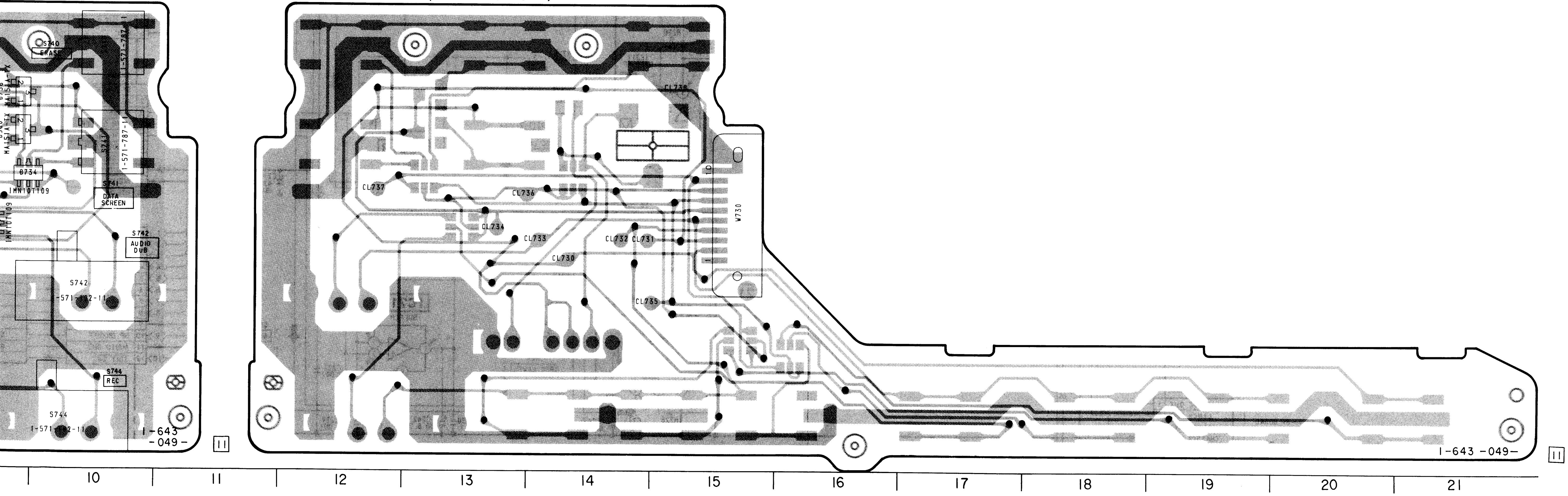
(DIODE)

D731	8-719-951-22	IC	IMN10
D732	8-719-951-22	IC	IMN10
D733	8-719-951-22	IC	IMN10
D734	8-719-951-22	IC	IMN10
D735	8-719-951-22	IC	IMN10
D736	8-719-108-24	DIODE	1SS223
D900	8-719-108-24	DIODE	1SS223

CK-57P BOARD (CONDUCTOR SIDE)

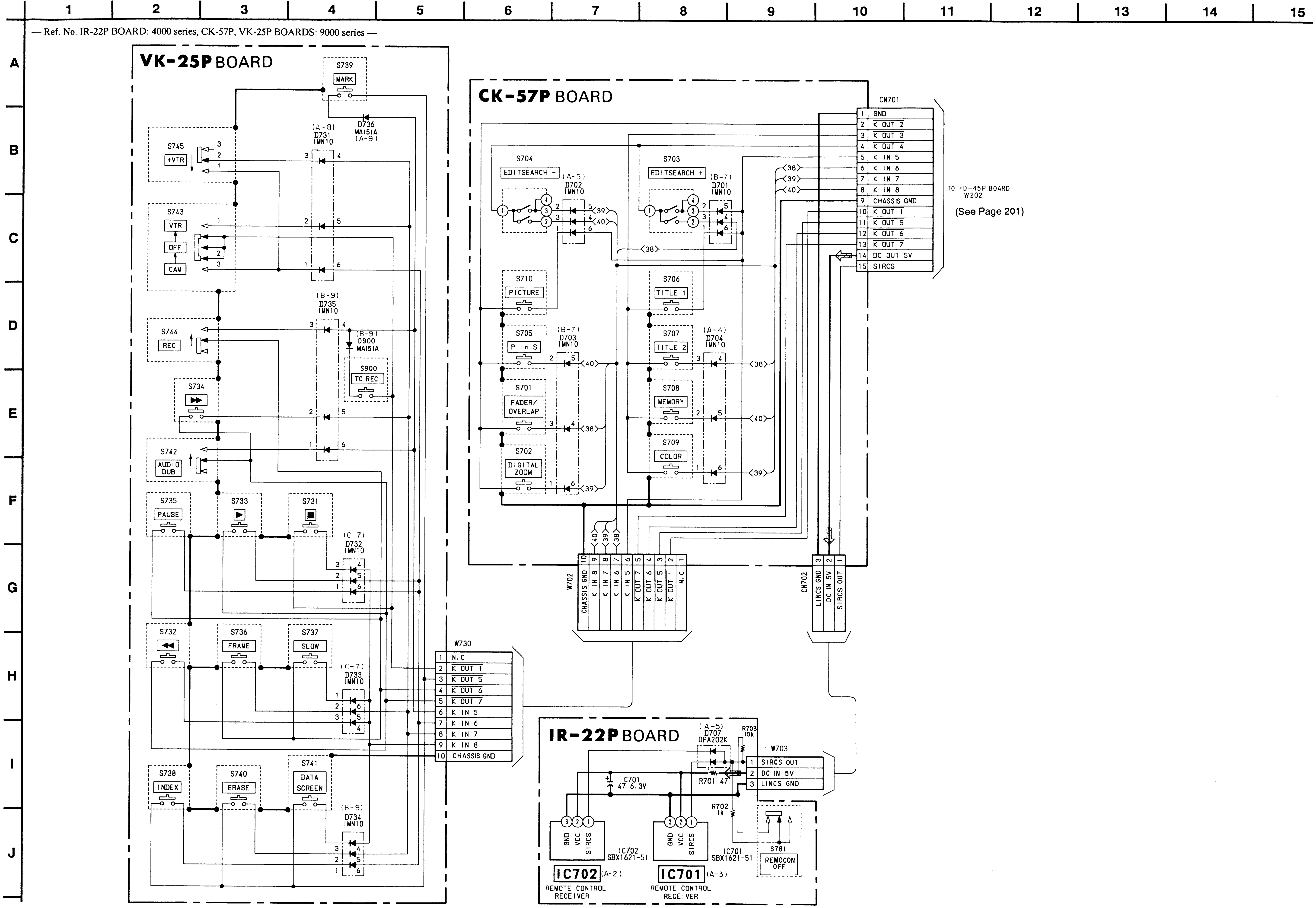

S703
1-554-592-21
S703
EDITSEARCH +
D701
1MN10T109
S702
DIGITAL ZOOM
1-571-787-11
1-643-051-
11
CL712
CL714
CL713
CL711
CL720
CL724
CL716
CL719
CL725
CL717
CL718
W722
S1
1-566-531-11
CL710
1-643-051-
11
7
8
9
10
11
12
13
14
15
16

VK-25P BOARD (CONDUCTOR SIDE)


S740
ERASE
1-571-787-11
S741
1-571-787-11
D734
1MN10T109
S741
DATA SCREEN
S742
AUDIO DUB
S742
1-571-782-11
S744
REC
S744
1-571-782-11
1-643-049-
11
CL738
CL737
CL736
CL734
CL733
CL730
CL732
CL731
CL735
W730
10
1
1-643-049-
11
10
11
12
13
14
15
16
17
18
19
20
21

CK-57P (KEY MATRIX), VK-25P (VTR FUNCTION SWITCH), IR-22P (REMOTE SENSOR, COMMANDER SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. IR-22P BOARD: 4000 series, CK-57P, VK-25P BOARDS: 9000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
VK-25P BOARD
S739 MARK
D736 MA151A (A-9)
(A-8) D731 IMN10
S745 +VTR
S743 VTR OFF CAM
(B-9) D735 IMN10
S744 REC
(B-9) D900 MA151A
S900 TC REC
S734
S742 AUDIO DUB
S735 PAUSE
S733
S731
(C-7) D732 IMN10
S732
S736 FRAME
S737 SLOW
(C-7) D733 IMN10
S738 INDEX
S740 ERASE
S741 DATA SCREEN
(B-9) D734 IMN10
W730
1 N.C
2 K OUT 1
3 K OUT 5
4 K OUT 6
5 K OUT 7
6 K IN 5
7 K IN 6
8 K IN 7
9 K IN 8
10 CHASSIS GND
CK-57P BOARD
S704 EDITSEARCH -
(A-5) D702 IMN10
S703 EDITSEARCH +
(B-7) D701 IMN10
S710 PICTURE
S706 TITLE 1
S705 P in S
(B-7) D703 IMN10
S707 TITLE 2
(A-4) D704 IMN10
S701 FADER/ OVERLAP
S708 MEMORY
S702 DIGITAL ZOOM
S709 COLOR
38 39 40
CN701
1 GND
2 K OUT 2
3 K OUT 3
4 K OUT 4
5 K IN 5
6 K IN 6
7 K IN 7
8 K IN 8
9 CHASSIS GND
10 K OUT 1
11 K OUT 5
12 K OUT 6
13 K OUT 7
14 DC OUT 5V
15 SIRCS
TO FD-45P BOARD W202
(See Page 201)
W702
10 CHASSIS GND
9 K IN 8
8 K IN 7
7 K IN 6
6 K IN 5
5 K OUT 7
4 K OUT 6
3 K OUT 5
2 K OUT 1
1 N.C
CN702
3 LINCS GND
2 DC IN 5V
1 SIRCS OUT
IR-22P BOARD
(A-5) D707 DPA202K
R703 10k
C701 47 6.3V
R701 47
R702 1k
W703
1 SIRCS OUT
2 DC IN 5V
3 LINCS GND
GND VCC SIRCS
IC702 SBX1621-51
IC701 SBX1621-51
IC702 (A-2) REMOTE CONTROL RECEIVER
IC701 (A-3) REMOTE CONTROL RECEIVER
S781 REMOCON OFF

09

CC-73P (RELAY), FP-89 (MODE SWITCH, TAPE END SENSOR), FP-90 (TAPE SELECT, TAPE TOP SENSOR) PRINTED WIRING BOARDS

— Ref. No. CC-73P, FP-89, FP-90 BOARDS: 5000 series —

(DIODE)

D301 8-719-820-44 PHOTE COUPLER TLP907-0 (SONY2)

(TRANSISTOR)

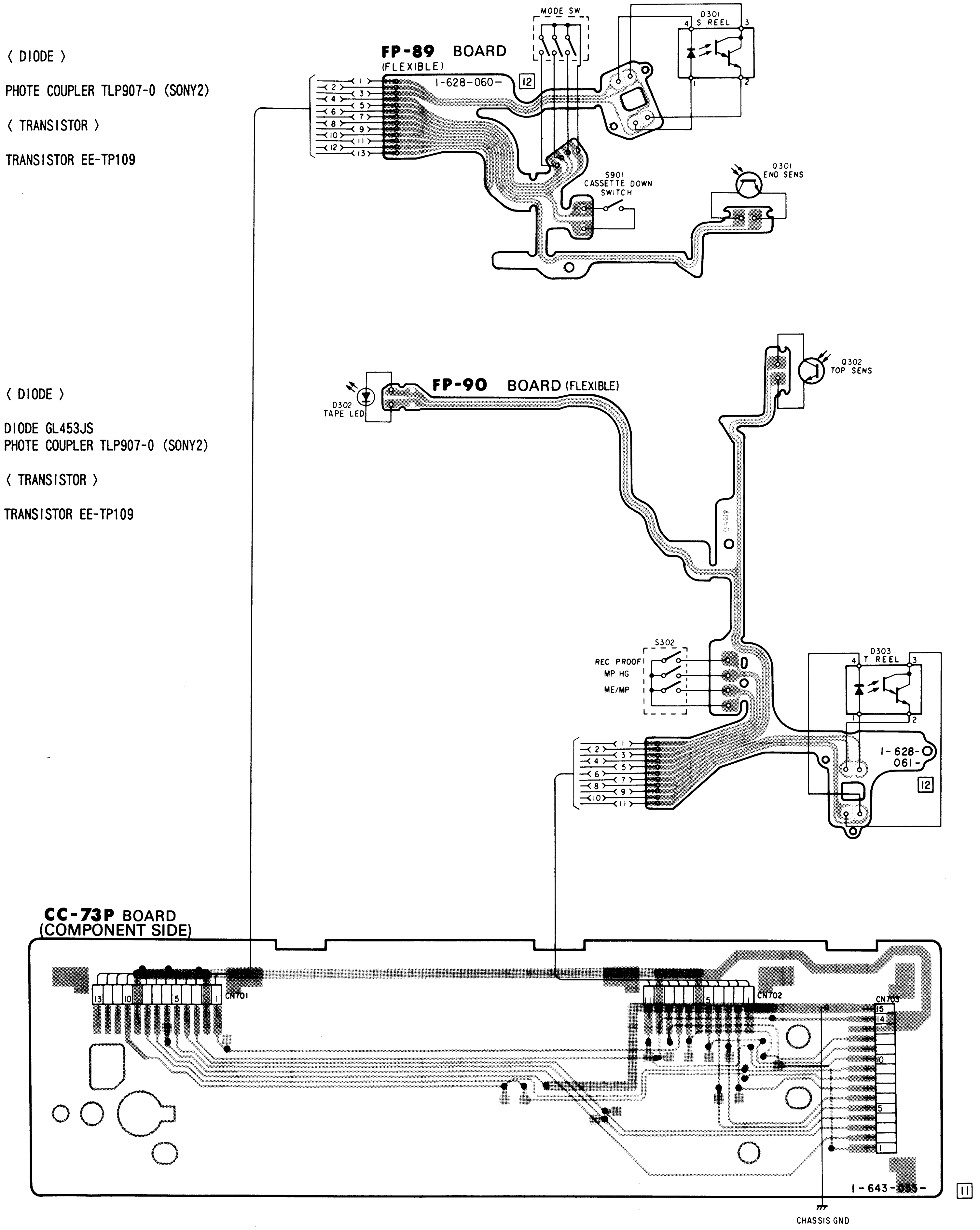
Q301 8-729-906-48 TRANSISTOR EE-TP109

(DIODE)

D302 8-719-026-04 DIODE GL453JS
D303 8-719-820-44 PHOTE COUPLER TLP907-0 (SONY2)

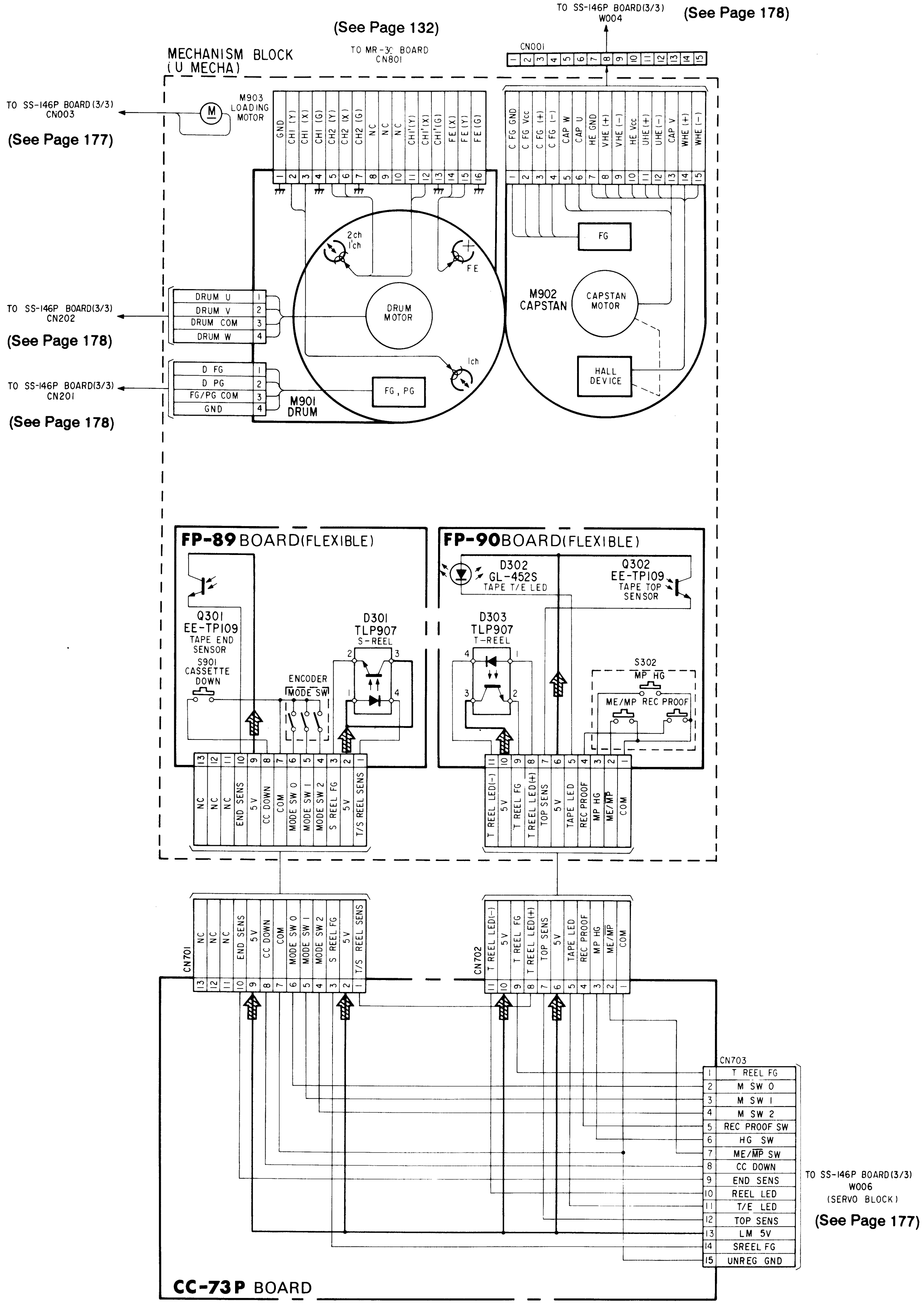
(TRANSISTOR)

Q302 8-729-906-48 TRANSISTOR EE-TP109


MODE SW
D301
S REEL
FP-89 BOARD
(FLEXIBLE)
1-628-060-
12
S901
CASSETTE DOWN
SWITCH
Q301
END SENS
Q302
TOP SENS
D302
TAPE LED
FP-90 BOARD (FLEXIBLE)
S302
REC PROOF
MP HG
ME/MP
D303
T REEL
1-628-061-
12
CC-73P BOARD
(COMPONENT SIDE)
CN701
CN702
CN703
1-643-055-
11
CHASSIS GND

CC-73P (RELAY), FP-89 (MODE SWITCH, TAPE END SENSOR), FP-90 (TAPE SELECT, TAPE TOP SENSOR) SCHEMATIC DIAGRAMS

— Ref. No. CC-73P, FP-89, FP-90 BOARDS: 5000 series —

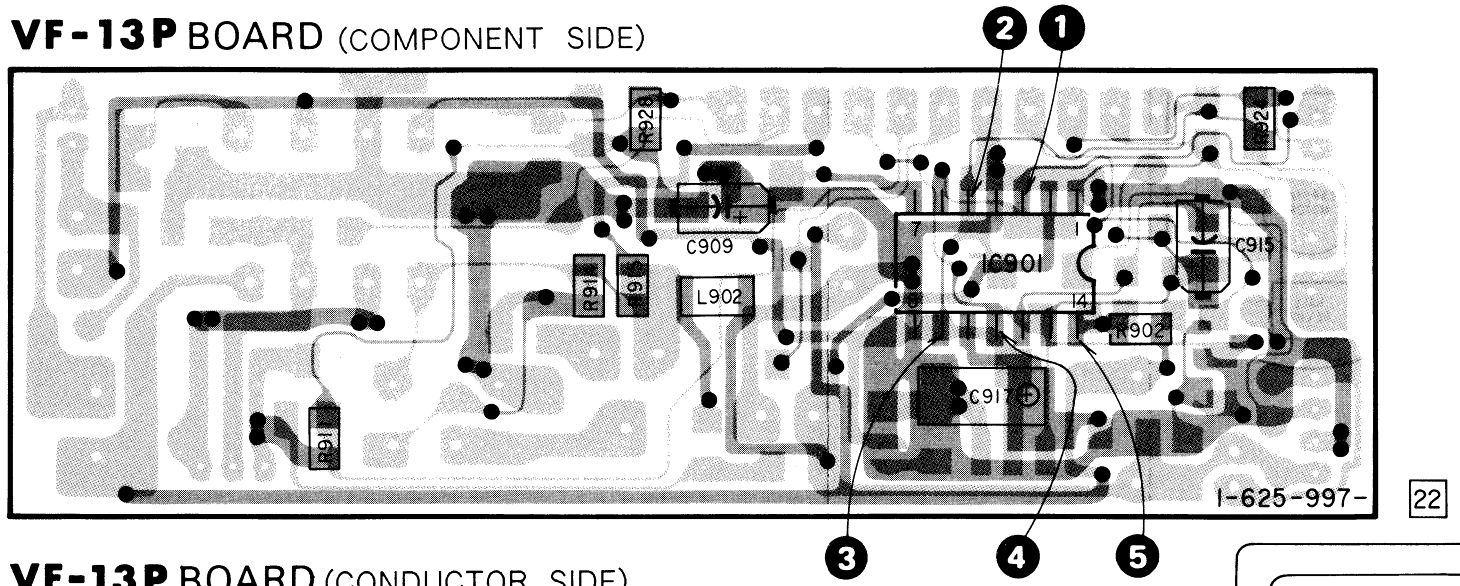

TO SS-146P BOARD(3/3) W004
(See Page 178)
(See Page 132)
TO MR-3C BOARD CN801
MECHANISM BLOCK (U MECHA)
CN001
M903 LOADING MOTOR
TO SS-146P BOARD(3/3) CN003
(See Page 177)
GND
CH1 (Y)
CH1 (X)
CH1 (G)
CH2 (Y)
CH2 (X)
CH2 (G)
NC
NC
NC
CH1'(Y)
CH1'(X)
CH1'(G)
FE (X)
FE (Y)
FE (G)
C FG GND
C FG Vcc
C FG (+)
C FG (−)
CAP W
CAP U
HE GND
VHE (+)
VHE (−)
HE Vcc
UHE (+)
UHE (−)
CAP V
WHE (+)
WHE (−)
2ch
1'ch
FE
FG
M902 CAPSTAN
CAPSTAN MOTOR
DRUM MOTOR
1ch
HALL DEVICE
FG, PG
M901 DRUM
TO SS-146P BOARD(3/3) CN202
(See Page 178)
DRUM U
DRUM V
DRUM COM
DRUM W
TO SS-146P BOARD(3/3) CN201
(See Page 178)
D FG
D PG
FG/PG COM
GND
FP-89 BOARD(FLEXIBLE)
Q301 EE-TP109 TAPE END SENSOR
S901 CASSETTE DOWN
ENCODER MODE SW
D301 TLP907 S-REEL
FP-90 BOARD(FLEXIBLE)
D302 GL-452S TAPE T/E LED
Q302 EE-TP109 TAPE TOP SENSOR
D303 TLP907 T-REEL
S302 MP HG
ME/MP REC PROOF
NC
NC
NC
END SENS
5V
CC DOWN
COM
MODE SW 0
MODE SW 1
MODE SW 2
S REEL FG
5V
T/S REEL SENS
T REEL LED(−)
5V
T REEL FG
T REEL LED(+)
TOP SENS
5V
TAPE LED
REC PROOF
MP HG
ME/MP
COM
CN701
CN702
CN703
1 T REEL FG
2 M SW 0
3 M SW 1
4 M SW 2
5 REC PROOF SW
6 HG SW
7 ME/MP SW
8 CC DOWN
9 END SENS
10 REEL LED
11 T/E LED
12 TOP SENS
13 LM 5V
14 SREEL FG
15 UNREG GND
TO SS-146P BOARD(3/3) W006 (SERVO BLOCK)
(See Page 177)
CC-73P BOARD

VF-13P (ELECTRICAL VIEW FINDER), TL-18P (TALLY LED), TL-19P (TALLY LED) PRINTED WIRING BOARDS

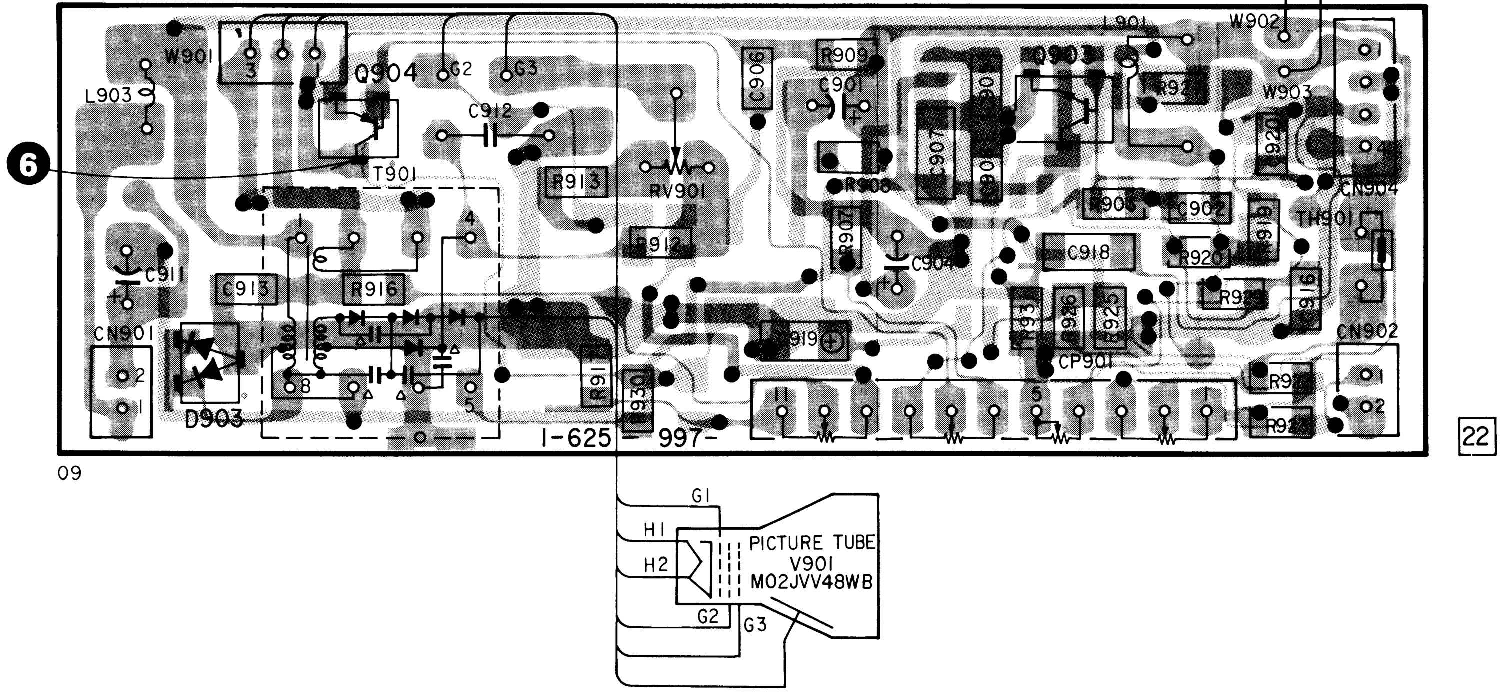
— Ref. No. VF-13P, TL-18P, TL-19P BOARDS: 1000 series —

		⟨ DIODE ⟩	
D903	8-719-400-20	DIODE	MA152WA
		⟨ IC ⟩	
IC901	8-759-420-01	IC	AN2512S
		⟨ TRANSISTOR ⟩	
Q903	8-729-106-68	TRANSISTOR	2SD1615A-GP
Q904	8-729-216-31	TRANSISTOR	2SA1163-G

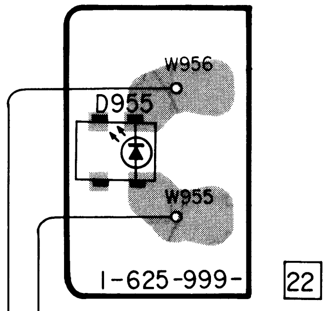
VF-13P BOARD (COMPONENT SIDE)


❷
❶
R928
C909
IC901
7
1
14
C915
R902
R914
R916
L902
C917
R911
1-625-997-
22
❸
❹
❺

VF-13P BOARD (CONDUCTOR SIDE)

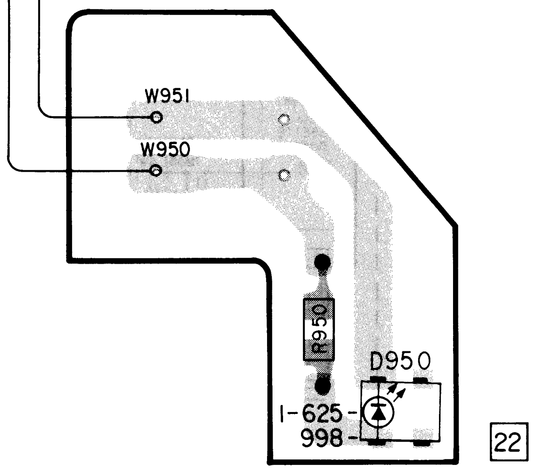

❻
W901
L903
3
Q904
G2
G3
C912
T901
R913
RV901
C906
R909
C901
Q903
L901
W902
R921
W903
C907
R908
R907
C904
R905
C902
R920
TH901
CN904
C918
R923
C911
C913
R916
R912
C919
R931
R926
R925
R919
CP901
CN902
CN901
D903
R911
R930
1-625
997-
22
09
G1
H1
H2
PICTURE TUBE
V901
M02JVV48WB
G2
G3

TL-19P BOARD (COMPONENT SIDE)


W956
D955
W955
1-625-999-
22

		⟨ DIODE ⟩	
D955	8-719-941-34	DIODE	GL-1HD51

TL-18P BOARD (CONDUCTOR SIDE)


W951
W950
R950
D950
1-625-
998-
22

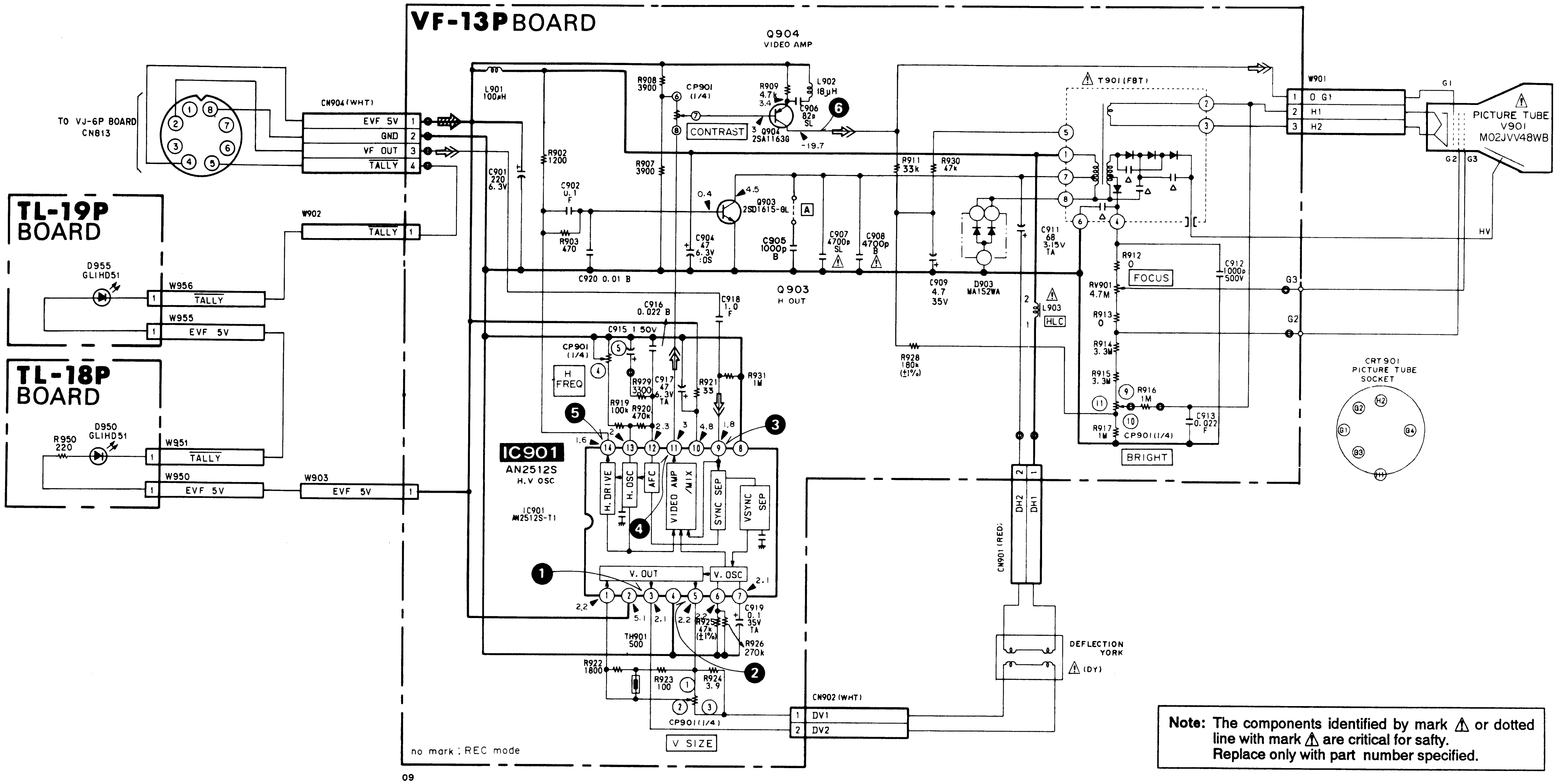
		⟨ DIODE ⟩	
D950	8-719-941-34	DIODE	GL-1HD51

VF-13P (ELECTRICAL VIEW FINDER), TL-18P (TALLY LED), TL-19P (TALLY LED) SCHEMATIC DIAGRAMS

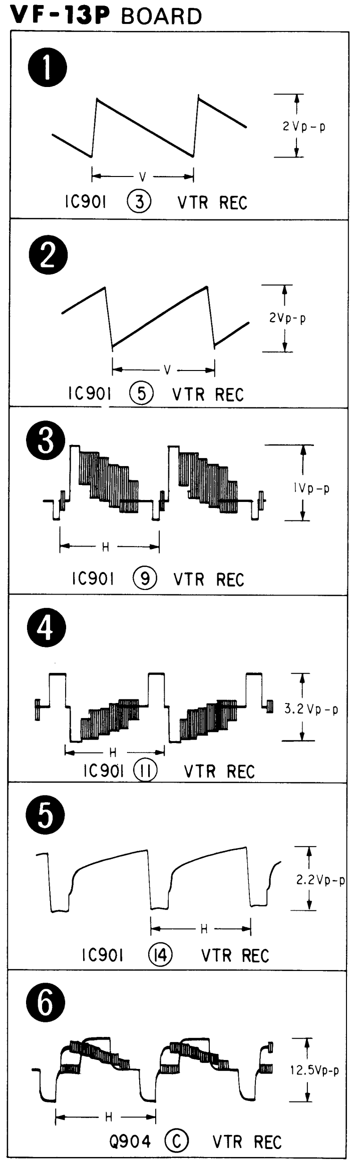
1 2 3 4 5 6 7 8 9 10 11 12 13

— Ref. No. VF-13P, TL-18P, TL-19P BOARDS: 1000 series —

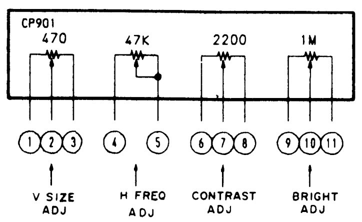
A B C D E F G H I J


VF-13P BOARD
TL-19P BOARD
TL-18P BOARD
TO VJ-6P BOARD CN813
CN904 (WHT)
EVF 5V 1
GND 2
VF OUT 3
TALLY 4
W902
TALLY 1
D955 GL1HD51
W956 TALLY 1
W955 EVF 5V 1
D950 GL1HD51
R950 220
W951 TALLY 1
W950 EVF 5V 1
W903 EVF 5V 1
L901 100μH
C901 220 6.3V
R902 1200
C902 0.1 F
R903 470
C920 0.01 B
R908 3900
R907 3900
CP901 (1/4)
CONTRAST
Q904 VIDEO AMP
R909 4.7k
3.4
L902 18μH
C906 82p SL
Q904 2SA1163G
-19.7
0.4
4.5
Q903 2SD1615-GL
A
C904 47 6.3V :OS
C905 1000p B
C907 4700p SL
C908 4700p B
Q903 H OUT
C916 0.022 B
C918 1.0 F
C915 1 50V
H FREQ
R929 3300
C917 47 6.3V TA
R921 33
R931 1M
R919 100k
R920 470k
1.6 2 2.3 3 4.8 1.8
IC901 AN2512S H.V OSC
IC901 AN2512S-T1
H. DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
2.1
2.2 5.1 2.1 2.2 2.2
C919 0.1 35V TA
R925 47k (±1%)
R926 270k
TH901 500
R922 1800
R923 100
R924 3.9
CP901 (1/4)
V SIZE
CN902 (WHT)
DV1 1
DV2 2
no mark : REC mode
09
R911 33k
R930 47k
C909 4.7 35V
D903 MA152WA
C911 68 3.15V TA
L903
HLC
R928 180k (±1%)
T901 (FBT)
R912 0
FOCUS
RV901 4.7M
C912 1000p 500V
R913 0
R914 3.3M
R915 3.3M
R916 1M
R917 1M
C913 0.022 F
CP901 (1/4)
BRIGHT
W901
1 0 G1
2 H1
3 H2
G1
PICTURE TUBE V901 M02JVV48WB
G2 G3
HV
G3
G2
CRT901 PICTURE TUBE SOCKET
H2 G2 G1 G4 G3 H1
CN901 (RED)
DH2 2
DH1 1
DEFLECTION YORK
(DY)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.



CP901


CP901
470
47K
2200
1M
①②③
④ ⑤
⑥⑦⑧
⑨⑩⑪
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ

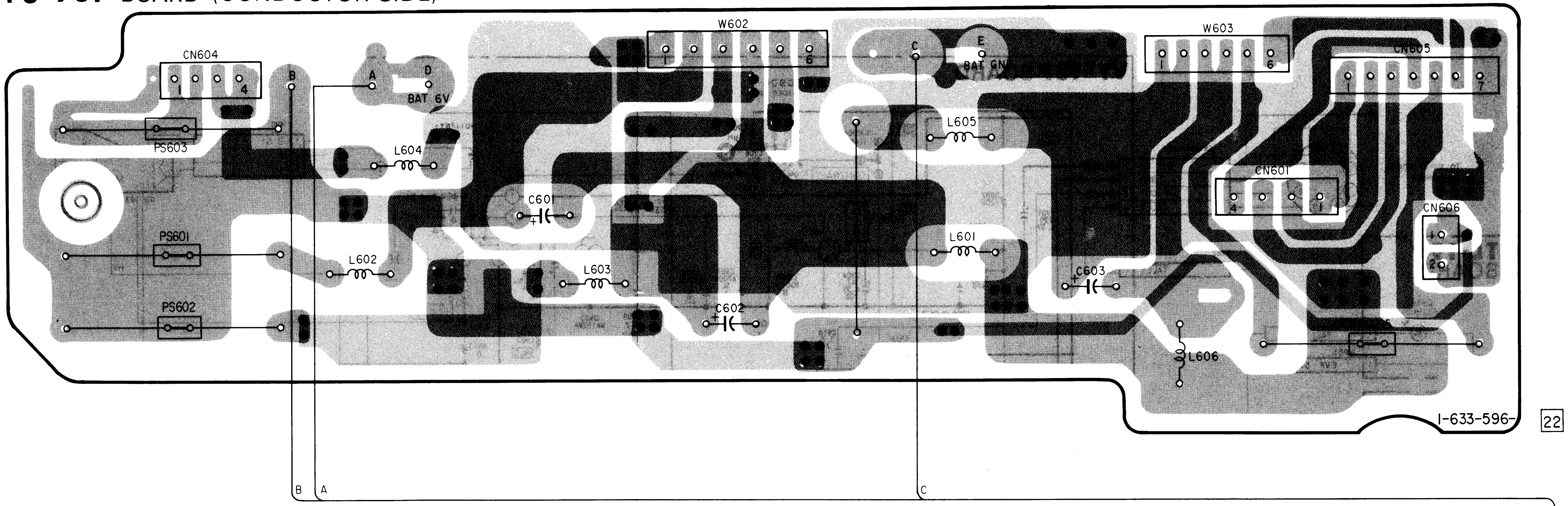
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

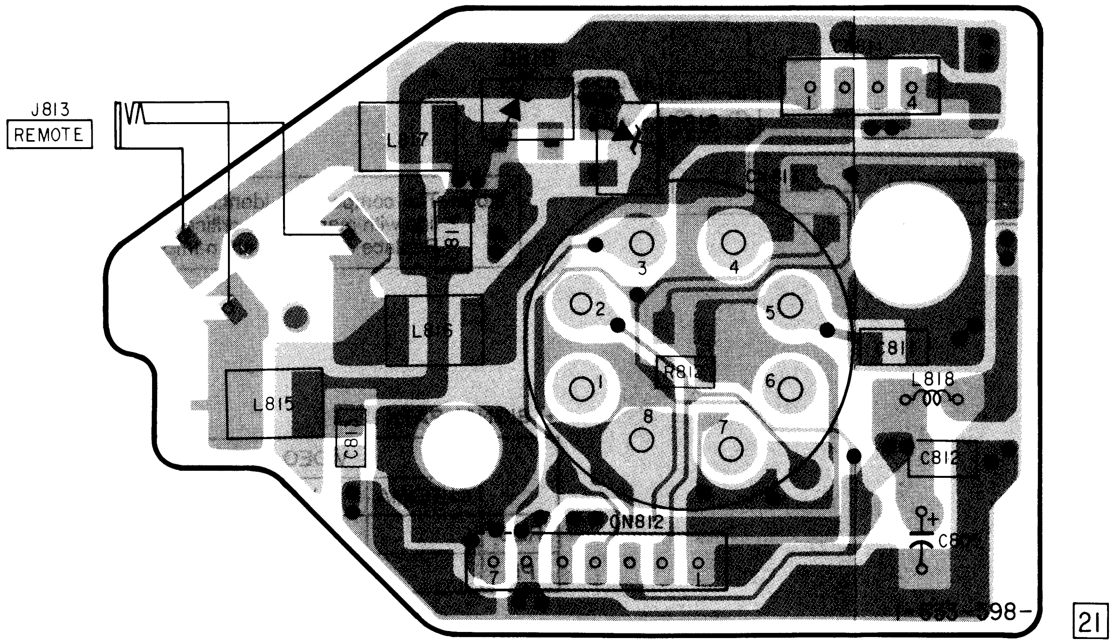
FU-70P (POWER SUPPLY), DC-25P (DC JACK), VJ-6P (EVF CONNECTOR, REMOTE JACK) PRINTED WIRING BOARDS

— Ref. No. FU-70P, DC-25P, VJ-6P BOARDS: 9000 series —

FU-70P BOARD (CONDUCTOR SIDE)


CN604
1
4
B
A
D
BAT 6V
PS603
L604
PS601
L602
PS602
W602
1
6
C601
L603
C602
C
E
BAT GND
L605
L601
C603
L606
W603
1
6
CN605
1
7
CN601
4
1
CN606
1
2
1-633-596-
22
B
A
C

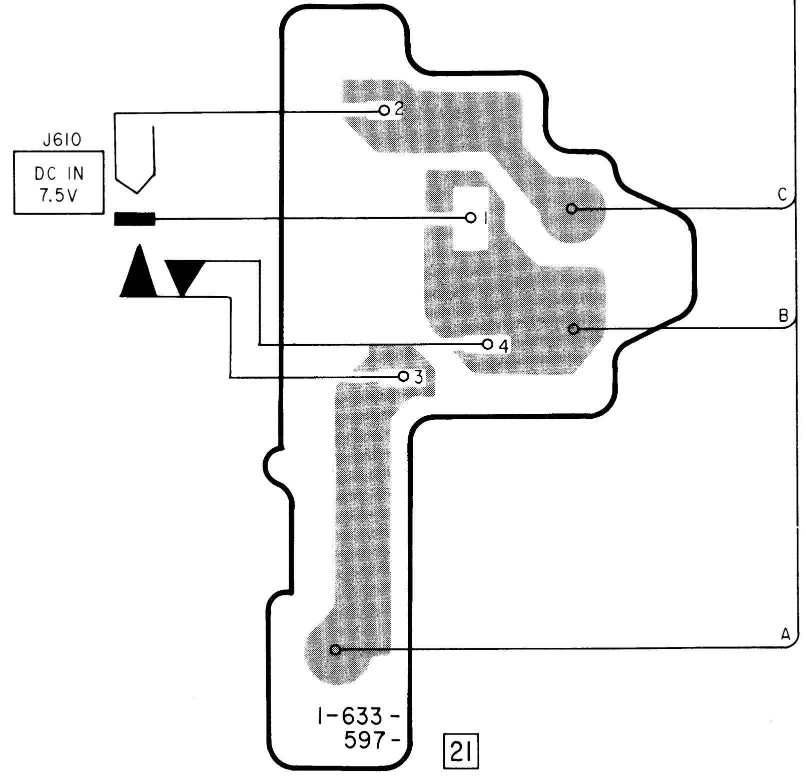
VJ-6P BOARD (CONDUCTOR SIDE)


J813
REMOTE
1
4
L817
L816
L815
C813
R812
C811
L818
C812
C814
CN812
1
2
3
4
5
6
7
8
7
1
1-633-598-
21

(DIODE)

D818	8-719-106-43	DIODE	RD9. 1M-B1
D819	8-719-106-43	DIODE	RD9. 1M-B1

DC-25P BOARD (CONDUCTOR SIDE)


J610
DC IN
7.5V
2
1
4
3
C
B
A
1-633-
597-
21

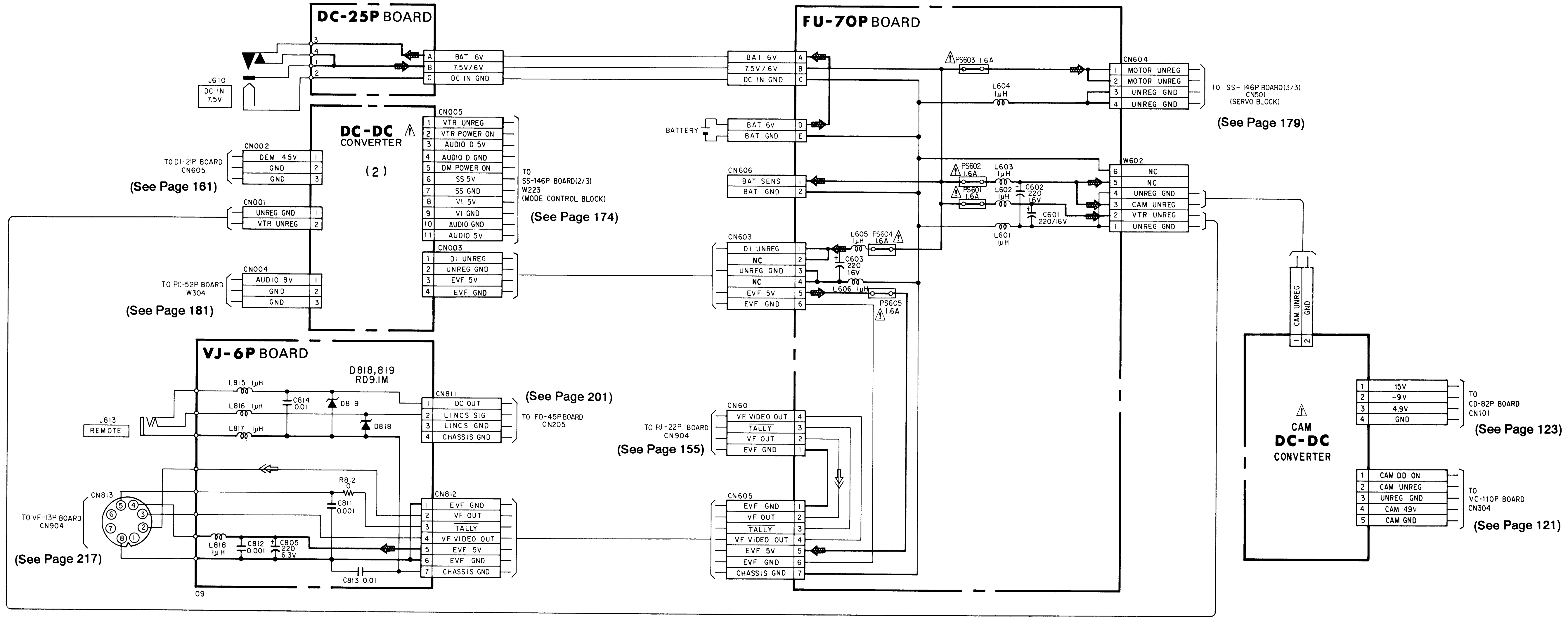
09

FU-70P (POWER SUPPLY), DC-25P (DC JACK), VJ-6P (EVF CONNECTOR, REMOTE JACK) SCHEMATIC DIAGRAMS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

— Ref. No. FU-70P, DC-25P, VJ-6P BOARDS: 9000 series —

A B C D E F G H I J


DC-25P BOARD
J610
DC IN 7.5V
A BAT 6V
B 7.5V/6V
C DC IN GND
DC-DC CONVERTER (2)
CN005
1 VTR UNREG
2 VTR POWER ON
3 AUDIO D 5V
4 AUDIO D GND
5 DM POWER ON
6 SS 5V
7 SS GND
8 VI 5V
9 VI GND
10 AUDIO GND
11 AUDIO 5V
TO SS-146P BOARD(2/3) W223 (MODE CONTROL BLOCK)
(See Page 174)
CN003
1 DI UNREG
2 UNREG GND
3 EVF 5V
4 EVF GND
CN002
DEM 4.5V 1
GND 2
GND 3
TO DI-21P BOARD CN605
(See Page 161)
CN001
UNREG GND 1
VTR UNREG 2
CN004
AUDIO 8V 1
GND 2
GND 3
TO PC-52P BOARD W304
(See Page 181)
VJ-6P BOARD
D818,819 RD9.1M
L815 1μH
L816 1μH
L817 1μH
C814 0.01
D819
D818
J813 REMOTE
CN811
1 DC OUT
2 LINCS SIG
3 LINCS GND
4 CHASSIS GND
(See Page 201)
TO FD-45P BOARD CN205
R812 0
C811 0.001
CN812
1 EVF GND
2 VF OUT
3 TALLY
4 VF VIDEO OUT
5 EVF 5V
6 EVF GND
7 CHASSIS GND
CN813
TO VF-13P BOARD CN904
(See Page 217)
L818 1μH
C812 0.001
C805 220 6.3V
C813 0.01
09
FU-70P BOARD
BAT 6V A
7.5V/6V B
DC IN GND C
BATTERY
BAT 6V D
BAT GND E
PS603 1.6A
L604 1μH
CN604
1 MOTOR UNREG
2 MOTOR UNREG
3 UNREG GND
4 UNREG GND
TO SS-146P BOARD(3/3) CN501 (SERVO BLOCK)
(See Page 179)
CN606
BAT SENS 1
BAT GND 2
PS602 1.6A
PS601 1.6A
L603 1μH
L602 1μH
C602 220 16V
C601 220/16V
L601 1μH
W602
6 NC
5 NC
4 UNREG GND
3 CAM UNREG
2 VTR UNREG
1 UNREG GND
CN603
DI UNREG 1
NC 2
UNREG GND 3
NC 4
EVF 5V 5
EVF GND 6
L605 1μH
PS604 1.6A
C603 220 16V
L606 1μH
PS605 1.6A
CN601
VF VIDEO OUT 4
TALLY 3
VF OUT 2
VF GND 1
TO PJ-22P BOARD CN904
(See Page 155)
CN605
EVF GND 1
VF OUT 2
TALLY 3
VF VIDEO OUT 4
EVF 5V 5
EVF GND 6
CHASSIS GND 7
CAM UNREG 1
GND 2
CAM DC-DC CONVERTER
1 15V
2 -9V
3 4.9V
4 GND
TO CD-82P BOARD CN101
(See Page 123)
1 CAM DD ON
2 CAM UNREG
3 UNREG GND
4 CAM 49V
5 CAM GND
TO VC-110P BOARD CN304
(See Page 121)

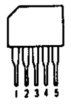
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.

- SIGNAL PATH

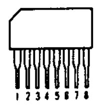
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

4-3. SEMICONDUCTORS

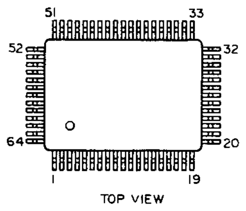
BA401



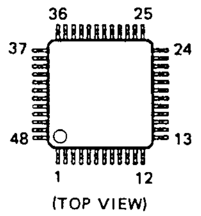
BA6138



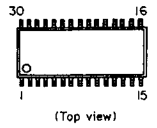
CF79028PG


51
33
52
32
64
20
1
19
TOP VIEW

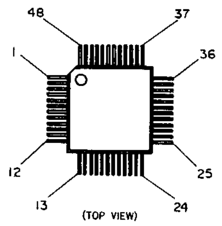
CF79050PV


36
25
37
24
48
13
1
12
(TOP VIEW)

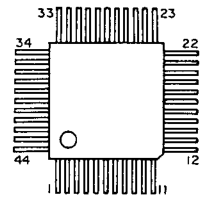
CXA1047M
CXA1127M
CXA1497N-2
LA7451M


30
16
1
15
(Top view)

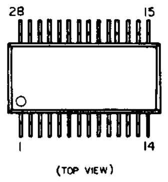
CXA1237AR
CXA1592R
CX20032
CX23054-T6


48
37
1
36
12
25
13
24
(TOP VIEW)

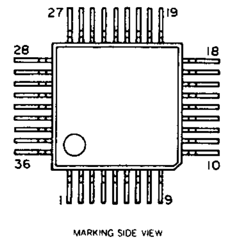
CXA1449Q
M51285BGP


33
23
34
22
44
12
1
11

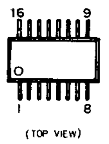
CXA1516M-T3
MB84256A-LL-PF-E1


28
15
1
14
(TOP VIEW)

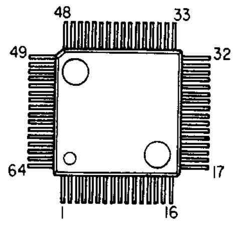
CXD1159Q


27
19
28
18
36
10
1
9
MARKING SIDE VIEW

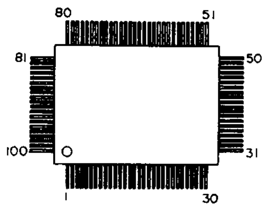
CXD1172AM


16
9
1
8
(TOP VIEW)

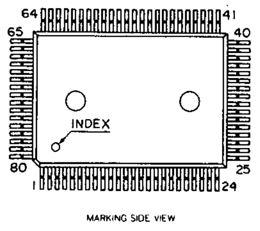
CXD1205R


48
33
49
32
64
17
1
16

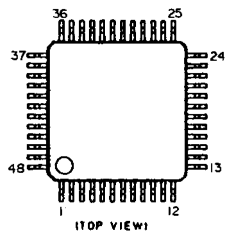
CXD1208Q


80
51
81
50
100
31
1
30

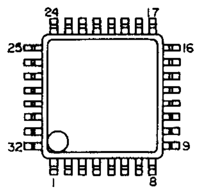
CXD1227Q
MC14094BF


64
41
65
40
INDEX
80
25
1
24
MARKING SIDE VIEW

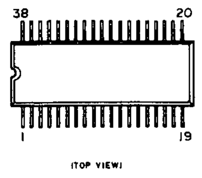
CXD1229Q
MB673198U


36
25
37
24
48
13
1
12
(TOP VIEW)

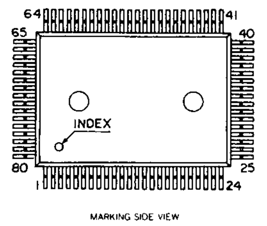
CXD2106Q


24
17
25
16
32
9
1
8

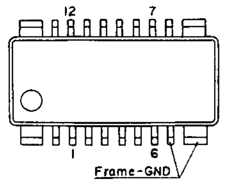
CXK1206M


38
20
1
19
(TOP VIEW)

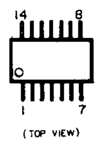
CXP80P116Q-1-205


64
41
65
40
INDEX
80
25
1
24
MARKING SIDE VIEW

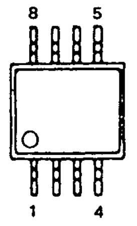
LB1631M


12
7
1
6
Frame-GND

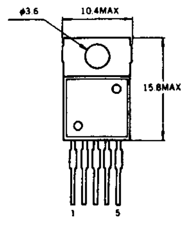
LM324D


14
8
1
7
(TOP VIEW)

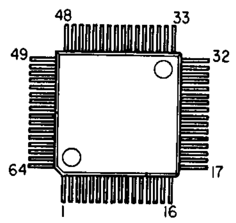
LM358D
LM358PS
M5201FP
NJM226M (T1)
NJM2234M
NJM2235M
NJM2246M
RC3414M



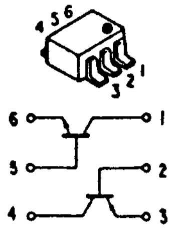
MC14538BF


φ3.6
10.4MAX
15.8MAX
1
5

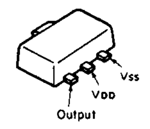
MC68HC11E9FUSC400467


48
33
49
32
64
17
1
16

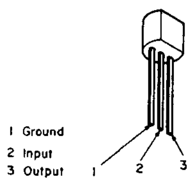
IMT1US-T109


4
5
6
3
2
1
6
1
5
2
4
3

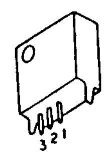
S-8054ALB-LM-S
S-8054ALR-LN-S


Vss
VDD
Output

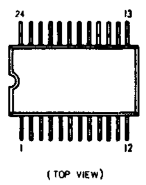
S-81250HG-RD-S


1 Ground
2 Input
3 Output
1
2
3

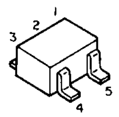
SBX1621-51



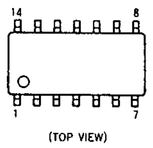
TA8607F


24
13
1
12
(TOP VIEW)

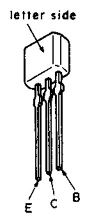
TC4S81F



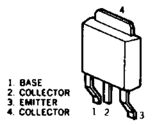
XRU4030BF


14
8
1
7
(TOP VIEW)

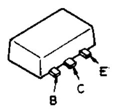
2SA1175-HFE


letter side
E
C
B

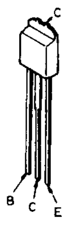
2SA1341


1 BASE
2 COLLECTOR
3 EMITTER
4 COLLECTOR
4
1
2
3

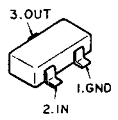
2SB1115A-YQ
2SB1121-S
2SB798-DL
2SD1615A-GP



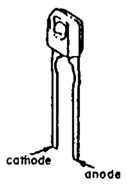
2SB1202FAST



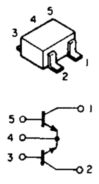
DTA144TU


3.OUT
1.GND
2.IN

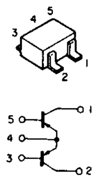
EE-TP109


cathode
anode

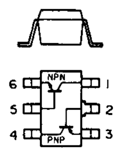
FMA2
FMA4
FMG2
FMG4
FMG5
FMW1
FMW2
NN1213


4
5
3
2
1
5
1
4
3
2

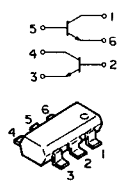
FMS1
FMS1FE
XN1401


4
5
3
2
1
5
1
4
3
2

IMD2
XN4312
XN4601


6
1
5
2
4
3
NPN
PNP

IMX1
XN4501
XN6213


5
1
6
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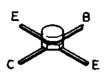
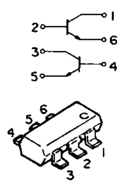
2
3
4
5
6
3
2
1

XN1113



XN6215
XN6401
XN6501


2
1
6
3
4
5
4
5
6
3
2
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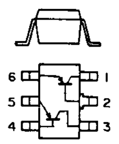
XN6401



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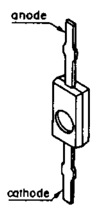
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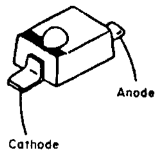
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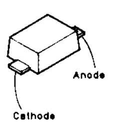
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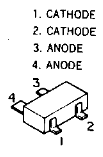
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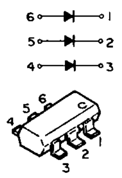
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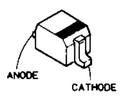
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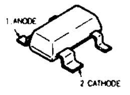
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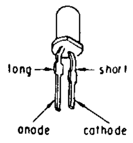
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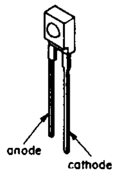
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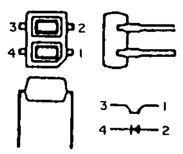
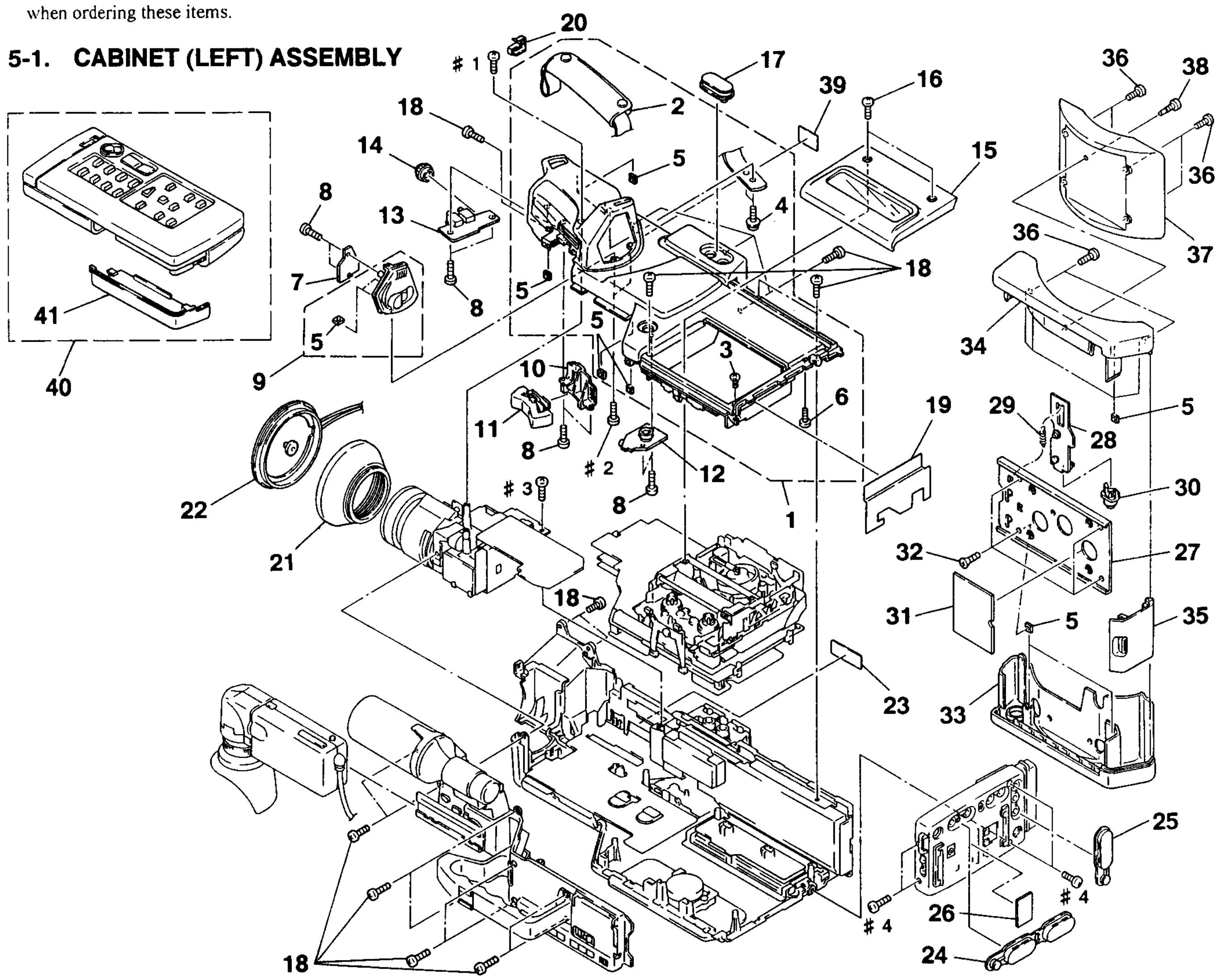


SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

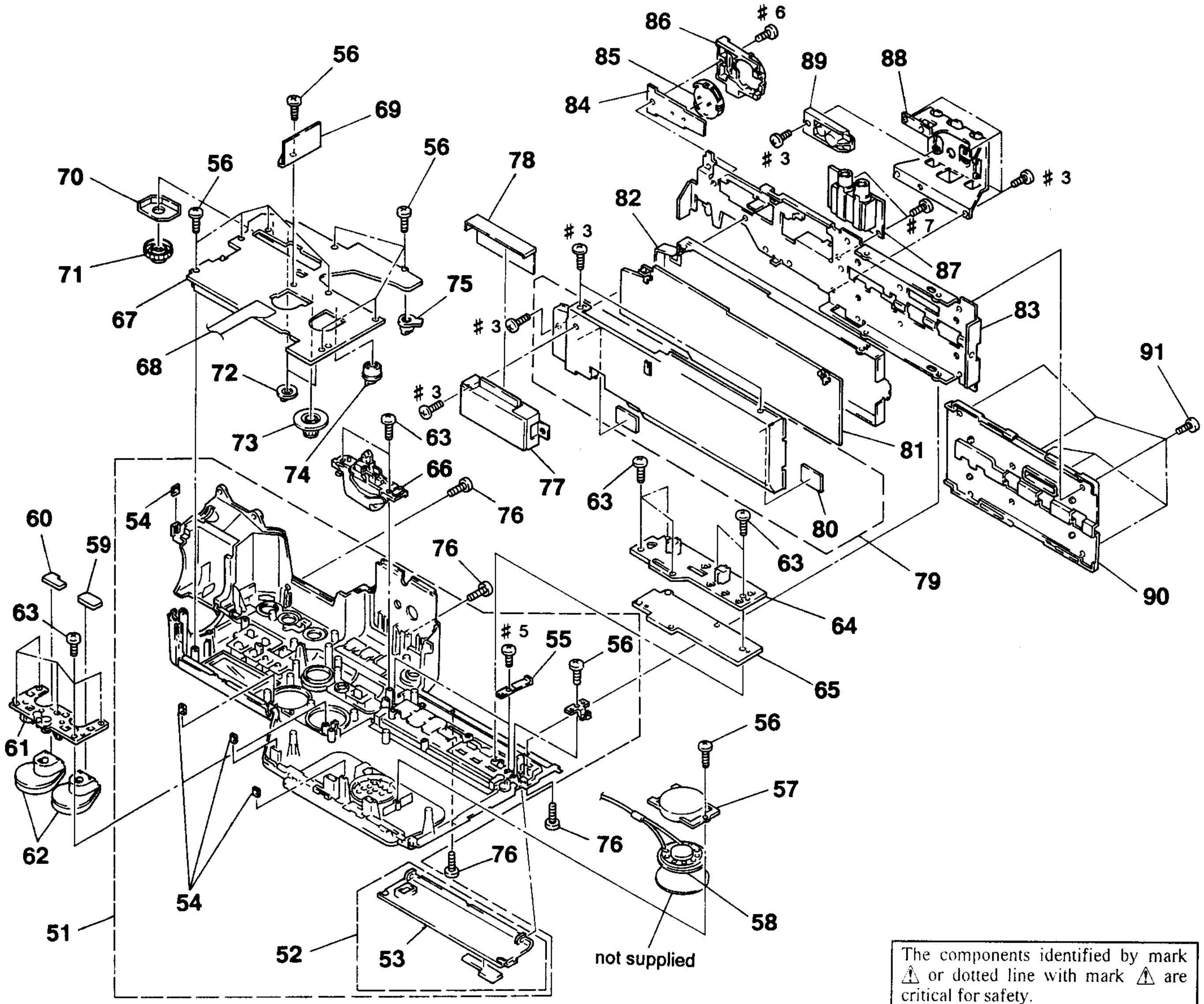
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (LEFT) ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	X-3941-379-1	CABINET (L) SUB ASSY	
2	3-947-102-01	BELT, GRIP	
3	3-742-887-01	SCREW (M2)	
4	3-669-480-21	+ PTPWH 2	
5	3-718-233-01	NUT, PLATE	
6	3-727-903-11	SCREW (2X5), TAPPING, +B	
* 7	1-633-599-21	SW-113P BOARD	
8	4-356-741-31	SCREW, TAPPING (BIND 2X8)	
9	X-3742-717-1	BASE SUB ASSY, SP	
10	3-742-802-01	HOLDER, ZM	
11	1-571-373-11	SWITCH, PUSH (ZOOM T/W)	
* 12	1-633-598-21	VJ-6P BOARD	
13	A-7071-373-A	HJ-11P BOARD, COMPLETE	
14	3-742-800-01	KNOB, HV	
15	X-3941-380-1	LID ASSY, CASSETTE	
16	3-733-912-11	SCREW (M2X4.5), SPECIAL HEAD	
17	3-742-869-01	COVER, MIC JACK	
18	3-742-886-11	SCREW (M2X6)	
* 19	3-942-997-01	INSULATOR, FU	
20	3-714-007-01	CLAMP, HOOD	
21	3-946-706-01	HOOD	
22	X-3941-381-1	CAP ASSY, HOOD	
* 23	3-946-711-01	LABEL, MODEL NUMBER (AEP)	(AEP)
* 23	3-947-653-01	LABEL, MODEL NUMBER (UK)	(UK, Australian, E)
24	3-742-852-01	COVER (A), JACK	
25	3-742-853-01	COVER (B), JACK	
* 26	3-719-683-01	LABEL, BATTERY FITTING	
27	3-742-789-01	PLATE, SLIDE	
28	X-3742-706-1	LEVER ASSY, LOCK	
29	3-307-373-00	SPRING, TENSION	
30	3-742-721-01	KNOB, LOCK	
31	3-742-717-01	PLATE, BLIND	
32	3-719-831-21	SCREW (M2X4)	
33	3-742-843-01	CABINET (LOWER) (RIGHT)	
34	3-742-842-01	CABINET (LOWER) (LEFT)	
35	3-742-833-01	CABINET (LOWER) (DOOR)	
36	3-742-886-01	SCREW (M2X4)	
37	3-742-881-01	PAT, SHOULDER	
38	3-742-900-01	SCREW, STOPPER	
* 39	3-704-235-01	LABEL, CAUTION (UK)	
40	1-465-395-11	COMMANDER, REMOTE (RMT-500)	
41	3-742-854-01	COVER, BATTERY	

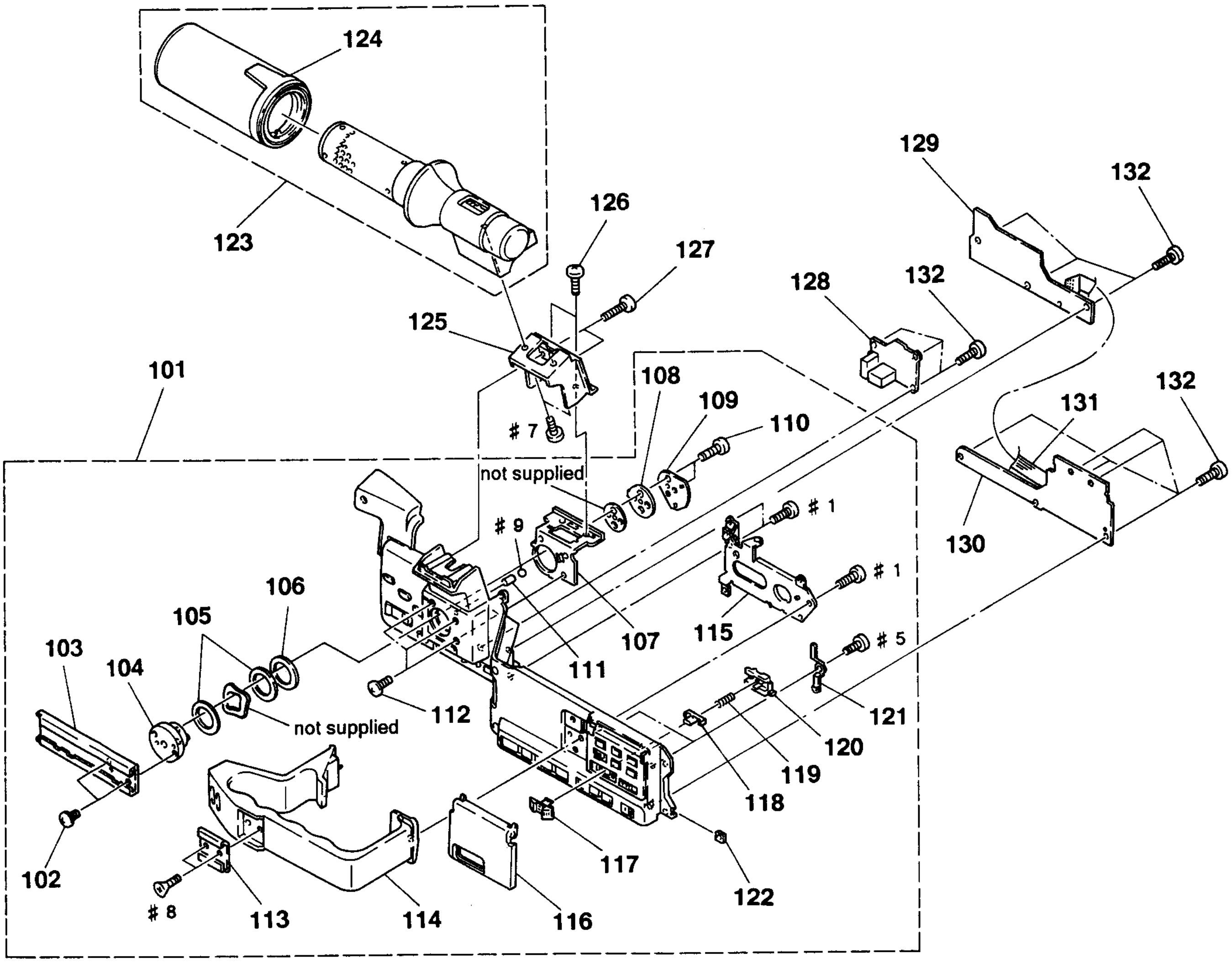
5-2. CABINET (RIGHT) AND CABINET FRAME ASSEMBLIES



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	X-3941-378-1	CABINET (R) SUB ASSY	
52	X-3742-728-1	DOOR ASSY, FUNCTION	
53	3-742-830-01	DOOR, FUNCTION	
54	3-718-233-01	NUT, PLATE	
55	3-732-705-01	SPRING, LEAF	
56	3-727-903-11	SCREW (2X5), TAPPING, +B	
57	3-742-811-01	BRACKET, SP	
58	1-503-293-00	SPEAKER	
59	A-7071-570-A	LR-14P BOARD, COMPLETE	
60	A-7071-571-A	LL-5P BOARD, COMPLETE	
61	3-742-801-01	RETAINER, METER	
62	1-520-499-51	METER, LEVEL	
63	4-356-741-31	SCREW, TAPPING (BIND 2X8)	
64	3-742-799-01	HOLDER (R), MD	
65	A-7071-569-A	DK-22P BOARD, COMPLETE	
66	1-542-138-11	MICROPHONE ASSY, NARATION	
67	A-7063-084-A	FD-45P BOARD, COMPLETE	
68	1-643-065-11	FP-517 FLEXIBLE BOARD	
* 69	3-742-755-01	PLATE, SHIELD, VR	
70	3-742-758-01	PLATE, BLIND, IRIS	
71	3-742-723-01	KNOB, IRIS	
72	3-742-792-01	KNOB, SHUTTER	
73	X-3742-709-1	KNOB ASSY, RV	
74	3-742-805-01	KNOB, BAL	
75	3-742-806-01	KNOB, LEVEL	
76	3-742-886-11	SCREW (M2X6)	
⚠77	1-450-836-11	TRANSFORMER, DC-DC CONVERTER	
* 78	X-3941-638-1	PLATE ASSY (2), SHIELD, DD	
* 79	X-3742-733-1	CASE (UPPER) ASSY, DI SHIELD	
80	3-742-820-01	CASE (UPPER), SHIELD, DI	
* 81	A-7062-187-A	DI-21P BOARD, COMPLETE	
* 82	3-742-821-01	CASE (LOWER), SHIELD, DI	
* 83	3-742-828-03	FRAME, CABINET	
* 84	1-633-600-21	LI-12P BOARD	
85	1-550-104-32	HOLDER, BATTERY	
86	3-742-835-11	COVER	
87	A-7071-372-A	MJ-45P BOARD, COMPLETE	
88	3-742-829-01	TABLE, TRIPOD	
89	3-742-743-01	PLATE, BLIND, TRIPOD	
90	3-742-831-02	SPACER, SLIDE	
91	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	

5-3. CABINET (UPPER) ASSEMBLY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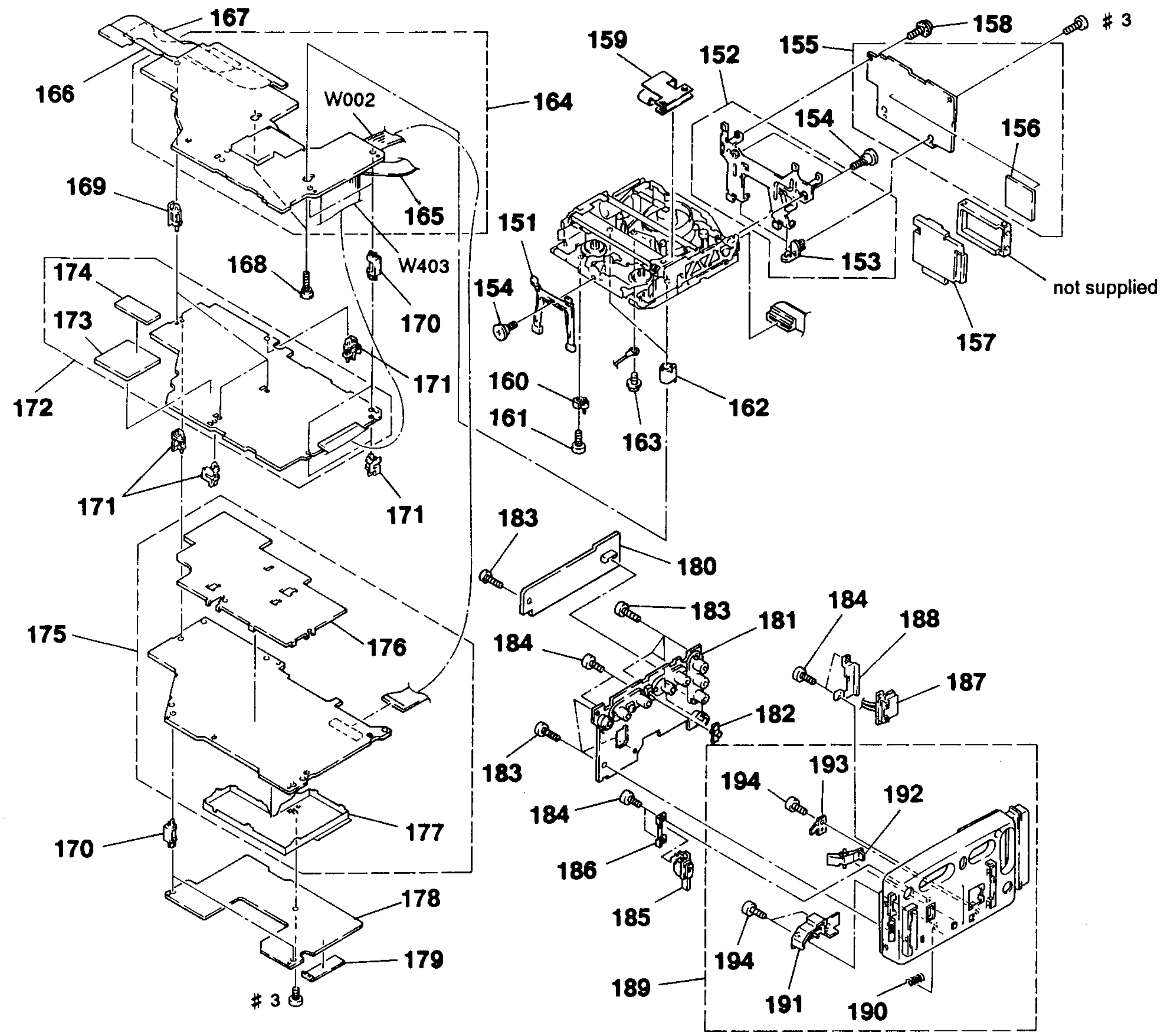
Ref. No.	Part No.	Description	Remark
101	X-3941-377-1	CABINET (UPPER) SUB ASSY	
102	3-730-745-11	SCREW (2.6X4), +P	
103	3-742-707-01	SHOE, VF	
104	3-742-836-01	TABLE, ROTARY	
105	3-688-981-01	WASHER, ROTARY TABLE	
106	3-742-716-01	SPACER, DM	
107	3-742-803-01	STOPPER, ROTARY TABLE	
108	3-742-735-01	RETAINER, ROTARY TABLE	
109	3-742-736-01	SPRING	
110	3-730-745-21	SCREW (2.6X6), +P	
111	3-742-748-01	SHAFT (A)	
112	3-742-887-01	SCREW (M2)	
113	3-724-511-01	SHOE, ACCESSORY	
114	3-946-701-01	HANDLE	
115	3-742-787-01	BRACKET, HANDLE	
116	3-742-786-01	LID, UPPER	
117	3-718-226-01	BUTTON, POWER	
* 118	3-718-257-11	BUTTON, PUSH, POWER	
119	3-303-973-00	SPRING, COMPRESSION	
120	3-718-227-01	PLATE, BLIND, POWER	
121	3-742-715-01	SPRING (U), LEAF	
122	3-718-233-01	NUT, PLATE	
123	8-814-273-00	MICROPHONE, BUILT-IN C-2024	
124	X-2542-050-1	SCREEN ASSY, WINDOW	
125	3-742-834-01	HOLDER, MICROPHONE	
126	3-742-886-11	SCREW (M2X6)	
127	4-356-741-31	SCREW, TAPPING (BIND 2X8)	
128	A-7071-568-A	IR-22P BOARD, COMPLETE	
129	A-7071-567-A	CK-57P BOARD, COMPLETE	
130	A-7071-566-A	VK-25P BOARD, COMPLETE	
131	1-575-436-11	WIRE, FLAT TYPE PVC (10 CORE)	
132	3-727-903-11	SCREW (2X5), TAPPING, +B	

5-4. MAIN PC BOARD AND CABINET (REAR) ASSEMBLIES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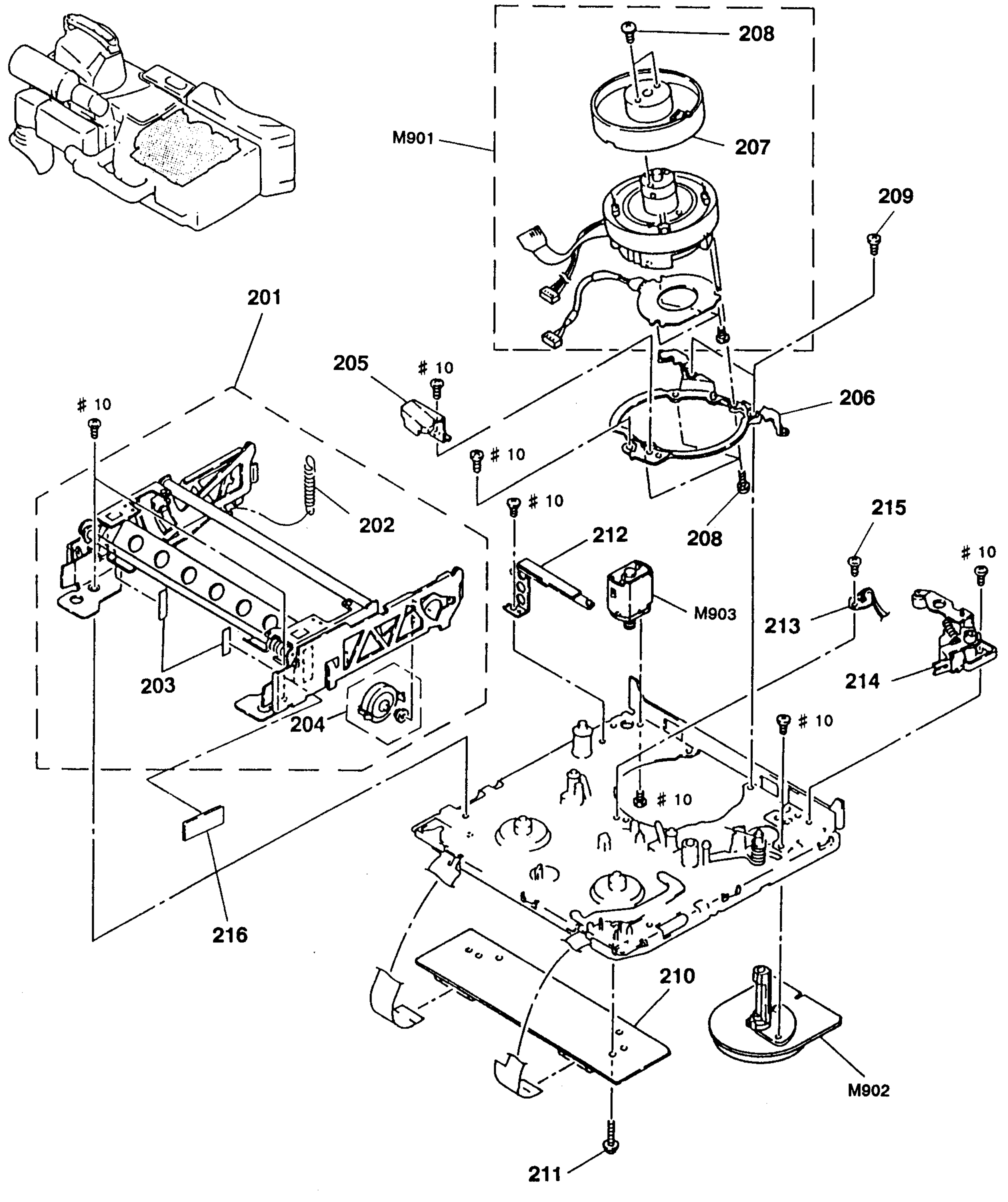
Ref. No.	Part No.	Description	Remark
151	X-3742-707-1	FRAME (UPPER) ASSY, MD	
152	X-3742-716-1	FRAME (LOWER) ASSY, MD	
153	3-742-810-01	HINGE (D), PC BOARD	
154	3-732-791-11	SCREW (M2X3)	
* 155	A-7062-181-A	MR-30 BOARD, COMPLETE	
156	A-7068-155-A	HR-3P HIC BOARD, COMPLETE	
* 157	3-732-793-01	LID, RP	
158	3-941-545-01	SCREW (M2X4), +P	
159	3-746-946-01	RIBBON, LID RETAINER	
160	3-732-766-01	SPACER (A), PC BOARD	
161	3-713-790-11	SCREW (M2X5), TAPPING, P3	
162	3-732-767-01	SPACER (B), PC BOARD	
163	3-703-502-01	SCREW	
164	A-7063-079-A	SS-146P BOARD, COMPLETE	
165	A-7071-563-A	FP-516 FLEXIBLE BOARD, COMPLETE	
166	1-643-059-11	FP-494 FLEXIBLE BOARD	
167	1-643-060-11	FP-495 FLEXIBLE BOARD	
168	3-742-713-01	SCREW (M2X8), TAPPING	
169	3-742-815-01	SUPPORT (S), PC BOARD	
170	3-742-817-01	HINGE (S), PC BOARD	
171	3-742-816-01	SUPPORT (V), PC BOARD	
172	A-7063-080-A	VI-100 BOARD, COMPLETE	
173	A-7068-176-A	HD-8P HIC BOARD, COMPLETE	
* 174	3-742-911-01	PROTECTOR, HD	
175	A-7063-078-A	PC-52P BOARD, COMPLETE	
* 176	X-3742-724-1	LID ASSY, PC SHIELD	
* 177	X-3742-723-1	CASE ASSY, SHIELD, PC	
* 178	A-7062-180-A	AS-22P BOARD, COMPLETE	
* 179	3-742-912-01	COVER, AS VOLUME	
* 180	1-633-596-21	FU-70P BOARD	
* 181	A-7062-182-A	PJ-22P BOARD, COMPLETE	
182	3-742-714-01	KNOB, AUDIO SELECTION	
183	4-356-741-31	SCREW, TAPPING (BIND 2X8)	
184	3-727-903-11	SCREW (2X5), TAPPING, +B	
* 185	1-633-597-21	DC-25P BOARD	
* 186	3-742-745-01	BRACKET, DC	
187	1-537-241-61	TERMINAL BOARD (BATTERY)	
* 188	3-742-711-01	PLATE, FIXED, TERMINAL	
189	X-3742-713-1	CABINET (REAR) SUB ASSY	
190	4-876-347-01	SPRING, COMPRESSION	
191	3-742-772-01	COVER, BATTERY LOCK	
192	3-742-770-01	LOCK, BATTERY	
193	3-742-712-01	SPRING	
194	4-356-741-11	SCREW, TAPPING (BIND 2X6)	
W002	1-633-614-11	FP-216 FLEXIBLE BOARD	
W403	1-629-777-11	FP-203 FLWXIBLE BOARD	

5-5. MECHANISM CHASSIS ASSEMBLY (1)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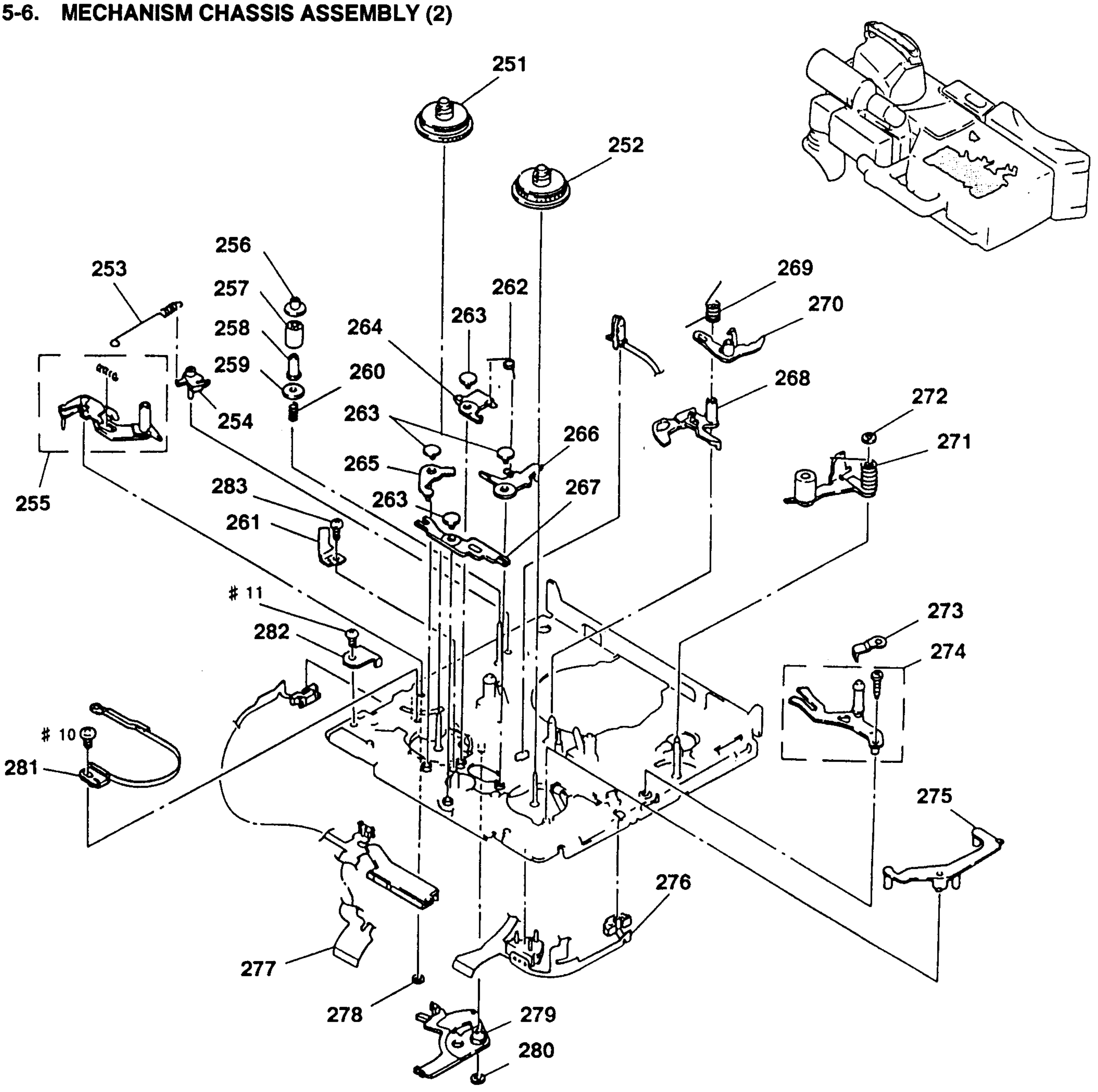
Ref. No.	Part No.	Description	Remark
201	X-3941-160-1	CASSETTE COMPARTMENT ASSY	
202	3-728-825-03	SPRING, TENSION	
* 203	3-728-829-01	TAPE	
204	X-3728-873-1	DAMPER ASSY	
205	3-728-868-01	GUARD, GUIDE	
206	X-3686-474-5	BASE ASSY, DRUM	
207	A-7048-327-A	DRUM ASSY, UPPER, ROTARY (DGR-70-R)	
208	3-686-493-01	SCREW (M2X5), P1	
209	3-736-406-01	SCREW (3) (M2X10)	
210	A-7071-562-A	CC-73P BOARD, COMPLETE	
211	3-713-790-11	SCREW (M2X5), TAPPING, P3	
212	X-3728-864-1	GROUND ASSY, SHAFT	
213	1-808-505-12	SENSOR (DEW)	
214	A-7040-161-A	ROLLER BLOCK ASSY, HC	
215	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
* 216	3-730-176-11	SHEET, MD	
M901	A-7049-387-A	DRUM ASSY (DGU-70A-R)	
M902	8-835-331-31	MOTOR, DC U-22A (CAPSTAN)	
M903	A-7040-160-A	MOTOR ASSY, THREADING (LOADING)	

5-6. MECHANISM CHASSIS ASSEMBLY (2)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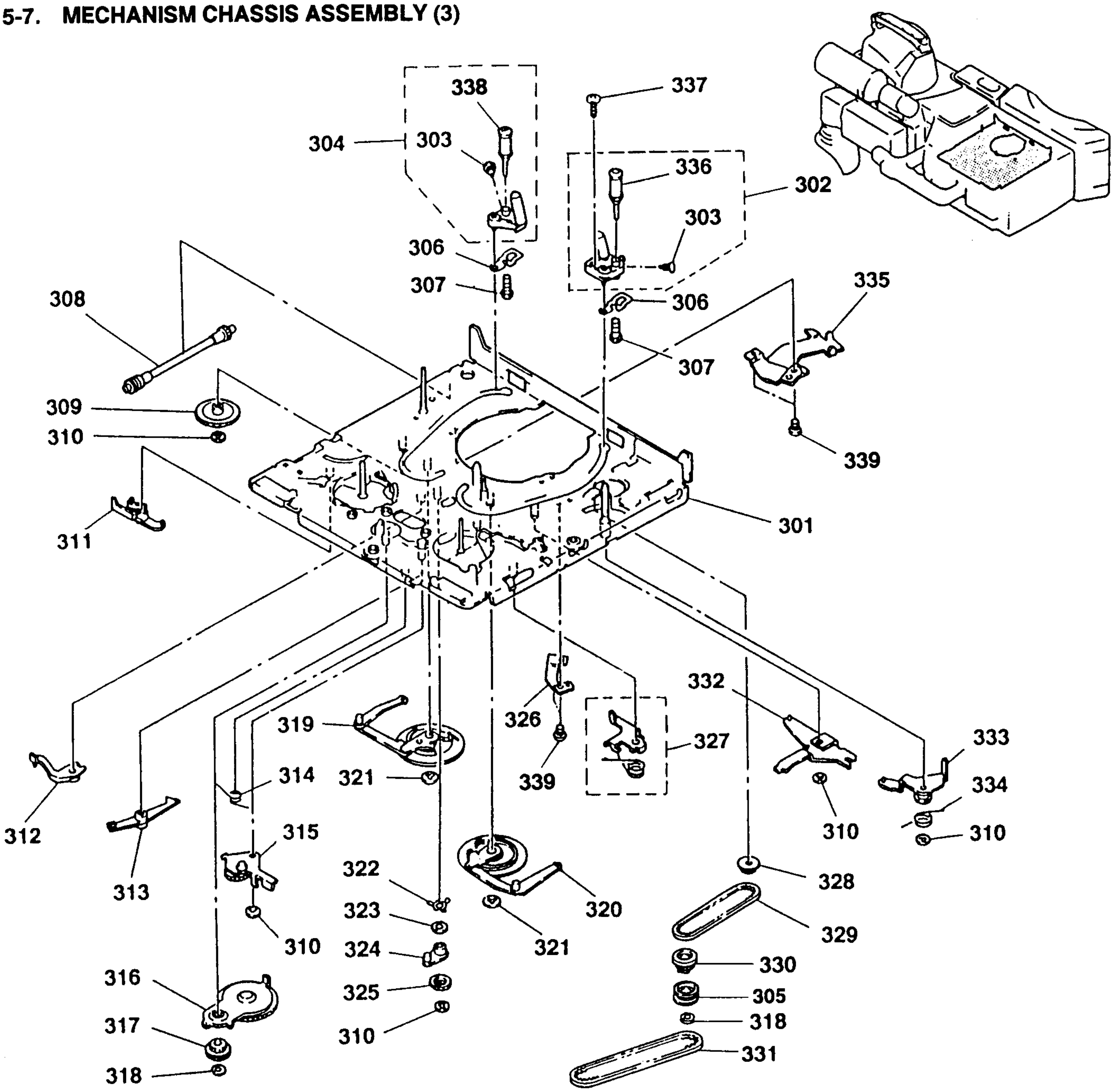
Ref. No.	Part No.	Description	Remark
251	X-3728-851-1	TABLE ASSY, REEL, S	
252	X-3728-855-1	TABLE ASSY, REEL, T	
253	3-736-414-01	SPRING, TENSION	
254	3-728-855-03	ARM, ADJUSTMENT	
255	X-3728-867-1	ARM ASSY (S), TENSION REGULATOR	
256	3-726-884-01	FLANGE, UPPER, TG2	
257	3-726-883-01	ROLLER, TG2	
258	3-726-885-01	SLEEVE, TG2	
259	3-726-882-02	FLANGE, LOWER, TG2	
260	3-726-886-01	SPRING, COMPRESSION	
261	3-726-848-01	RETAINER, TL	
262	3-726-866-01	SPRING (ST), TORSION	
263	3-726-858-01	PIN, SHAFT RETAINER	
264	3-728-849-01	BRAKE, S	
265	3-726-852-01	BRAKE, LB	
266	3-728-850-01	BRAKE, T	
267	3-726-853-01	LEVER, LB	
268	3-728-875-01	STOPPER, RK	
269	3-726-864-01	SPRING (RK), TORSION	
270	3-728-852-02	ARM, RK STOPPER	
271	A-7040-219-A	ARM BLOCK ASSY, PINCH	
272	3-669-465-00	WASHER (1.5), STOPPER	
273	3-728-808-01	SPRING, LEAF	
274	X-3728-869-1	ARM ASSY, TG7	
275	3-728-848-01	ARM, LB RELEASE	
276	1-628-061-12	FP-90 FLEXIBLE BOARD	
277	1-628-060-12	FP-89 FLEXIBLE BOARD	
278	3-321-393-11	WASHER, STOPPER	
279	X-3726-806-2	LEVER ASSY, SW	
280	3-726-829-01	WASHER, STOPPER	
281	X-3728-859-1	BAND ASSY, TENSION REGULATOR	
282	3-730-125-01	RETAINER, SW	
283	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	

5-7. MECHANISM CHASSIS ASSEMBLY (3)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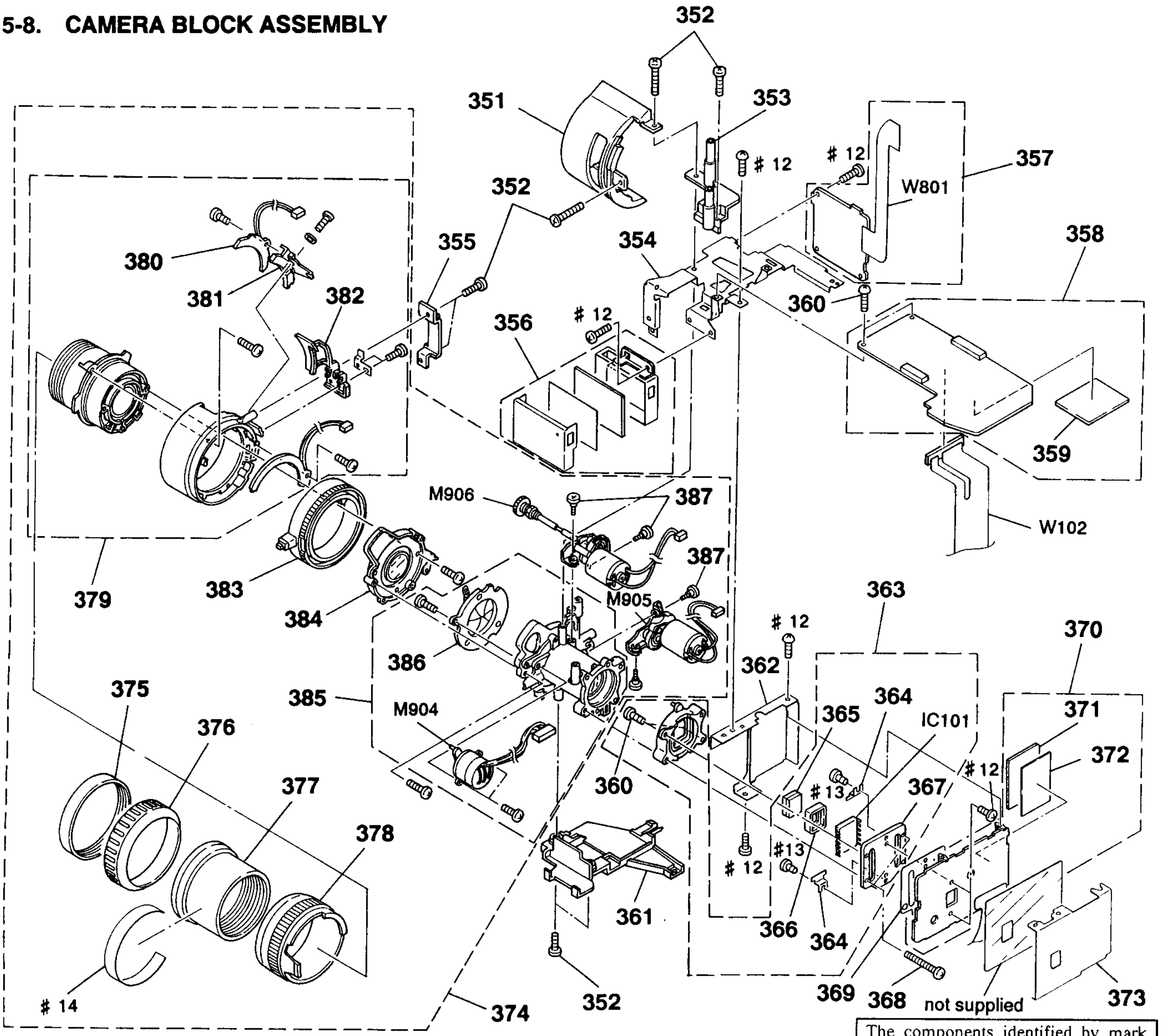
Ref. No.	Part No.	Description	Remark
* 301	X-3749-038-1	CHASSIS ASSY, MECHANICAL	
302	A-7040-216-A	COASTER (RIGHT)BLOCK ASSY(M1P)	
303	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
304	A-7040-204-A	COASTER (LEFT) BLOCK ASSY	
305	3-741-196-02	PULLEY (LOWER), BELT MIDWAY	
306	3-736-485-01	SPRING, LEAF, COSTER	
307	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
308	X-3940-276-2	WORM ASSY	
309	3-744-109-01	GEAR, WHEEL	
310	3-726-829-01	WASHER, STOPPER	
311	3-728-842-01	LEVER, EJECT	
312	3-728-851-01	BRAKE, UL	
313	3-726-854-01	ARM, BRAKE RELEASE	
314	3-726-865-01	SPRING (LB), TORSION	
315	A-7040-130-A	GEAR BLOCK ASSY, LB	
316	X-3728-866-1	GEAR ASSY, RK	
317	X-3728-858-2	GEAR ASSY, RC	
318	3-321-393-11	WASHER, STOPPER	
319	X-3728-842-1	GEAR (LEFT) ASSY, DRIVE	
320	X-3728-843-1	GEAR (RIGHT) ASSY, DRIVE	
321	3-669-465-00	WASHER (1.5), STOPPER	
322	3-726-867-01	SPRING, LEAF	
323	3-701-436-21	WASHER, POLYEHTHYLENE	
324	3-726-857-03	ARM, UL	
325	3-726-856-04	GEAR, UL	
* 326	3-726-805-01	REINFORCEMENT (TT)	
327	X-3726-808-3	BRAKE ASSY, TS	
328	X-3726-805-1	GEAR ASSY, JOINT	
329	3-728-866-11	BELT (S), TIMING	
330	X-3726-813-4	PULLEY (UPPER) ASSY, MIDWAY	
331	3-741-197-01	BELT (L), TIMING	
332	3-941-322-01	LEVER, LOADING	
333	X-3940-279-1	ARM ASSY, PINCH SUB	
334	3-726-895-01	SPRING	
335	X-3940-278-1	REINFORCEMENT (SS) ASSY	
336	X-3728-808-4	ROLLER ASSY (U)(PLATING), GUIDE	
337	3-736-473-01	SCREW (M2X0.25) (THREE LOCK)	
338	X-3726-879-4	ROLLER ASSY ((U)-NB), GUIDE	
339	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	

5-8. CAMERA BLOCK ASSEMBLY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W801
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W102
M906
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M904
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IC101
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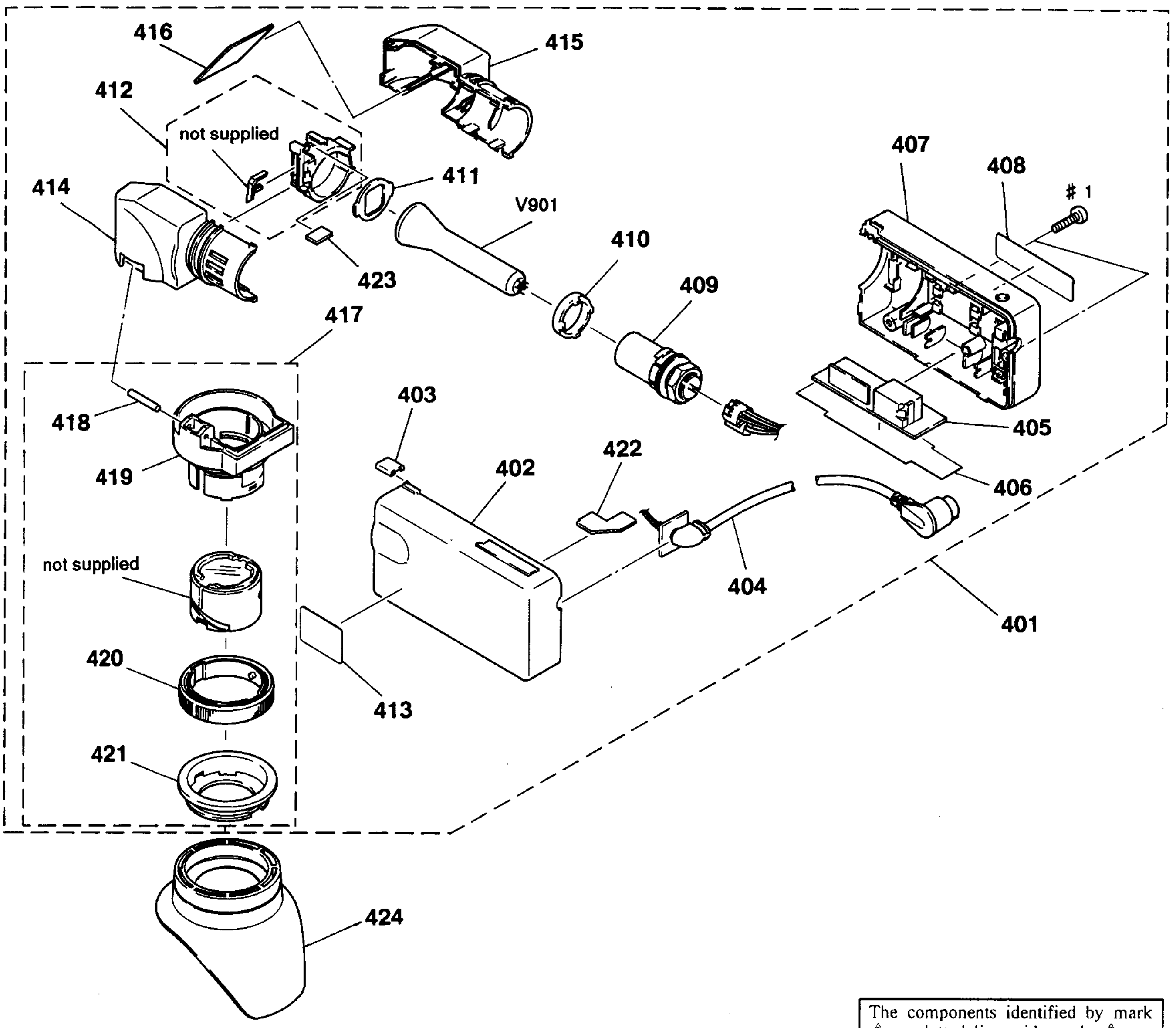
Be sure to read "Cautions for Replacement of CCD Imager" on page 116 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
351	3-946-705-01	COVER, LENS	
352	3-727-903-11	SCREW (2X5), TAPPING, +B	
* 353	3-946-699-01	FRAME (C), C	
* 354	3-946-698-01	FRAME (B), C	
355	3-947-589-01	BRACKET, GEAR COVER	
⚠356	1-466-230-21	CONVERTER UNIT, D/D (CAMERA)	
357	A-7063-082-A	AF-89P BOARD, COMPLETE	
358	A-7063-083-A	VC-110P BOARD, COMPLETE	
359	A-7068-186-A	MX-10AP HIC BOARD, COMPLETE	
360	3-738-519-11	SCREW (M2X3), +B	
* 361	3-946-697-01	FRAME (A), C	
* 362	X-3744-702-1	CASE (MAIN) ASSY, SHIELD, C	
* 363	A-7030-270-A	CCD ASSY	
* 364	3-725-175-01	STOPPER, CCD	
365	1-547-381-12	FILTER BLOCK, OPTICAL	
* 366	3-725-177-01	RUBBER, SEAL	
367	3-725-176-11	HOLDER, CCD	
368	3-335-640-51	SCREW (M2X16)	
* 369	3-725-180-01	SHEET, INSULATING, CCD HOLDER	
370	A-7063-081-A	CD-82P BOARD, COMPLETE	
371	A-7068-194-A	DT-77FB HIC BOARD, COMPLETE	
* 372	X-3739-811-1	PLATE ASSY, SHIELD, CD	
373	X-3744-763-1	LID, C SHIELD CASE	
374	1-547-546-11	LENS, ZOOM (VCL-810XB)	
375	3-708-364-01	RING, STEP UP	
376	3-708-365-01	RUBBER, (F)	
377	3-708-158-01	RING UNIT, F	
378	3-708-159-01	RING, (F) SCALE	
379	3-708-366-01	ZOOM UNIT	
380	3-708-173-01	SENSOR ASSY, (F)	
381	3-708-162-01	HOLDER, PC BOARD	
382	3-708-161-01	BEARING, F	
383	3-708-367-01	RING ASSY, ZOOM	
384	3-708-164-01	FRAME, MIDWAY	
385	3-708-369-01	FLUX ASSY, LUMINOUS	
386	3-708-379-01	IRIS UNIT	
387	3-707-501-01	SCREW, (Z) MOTOR FITTING	
M904	3-707-816-01	METER ASSY, EE (IRIS)	
M905	3-708-304-01	MOTOR ASSY, PZ GEAR (ZOOM)	
M906	3-707-937-01	MOTOR ASSY, AF GEAR (FOCUS)	
W102	1-633-975-11	FP-268 FLEXIBLE BOARD	
W801	1-643-061-11	FP-496 FLEXIBLE BOARD	
IC101	8-752-606-77	IC ICX039BNA-2 (CCD IMAGER)	

5-9. EVF ASSEMBLY (VF-271, VF-272)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 401	A-7019-313-A	VF-271 ASSY (AEP, Australian, E)	
* 401	A-7019-314-A	VF-272 ASSY (UK)	
402	X-3742-701-1	CASE (UPPER) ASSY, VF	
403	3-742-709-01	PLATE, ORNAMENTAL	
404	1-575-441-11	CORD, CONNECTION (WITH 8P PLUG)	
* 405	A-7062-738-A	VF-13P BOARD, COMPLETE	
* 406	3-742-752-01	INSULATOR, VF	
407	X-3742-712-1	CASE (LOWER) ASSY, VF	
* 408	3-941-738-01	LABEL, MODEL NUMBER, EVF (AEP) (AEP, Australian, E)	
* 408	3-941-739-01	LABEL, MODEL NUMBER, EVF (UK) (UK)	
⚠409	1-451-357-21	DEFLECTION YOKE	
410	3-941-596-01	RETAINER (M), CRT	
411	3-941-597-01	RING (M), CRT FIXED	
412	X-3940-334-1	COVER (M) ASSY, CRT	
* 413	3-704-235-01	LABEL, CAUTION (UK)	
414	X-3742-703-3	HOLDER (UPPER) ASSY, CRT	
415	X-3742-704-2	HOLDER (LOWER) ASSY, CRT	
416	3-742-710-01	MIRROR, REFLECTION	
417	A-7091-150-A	TABLE ASSY, LENS	
418	3-742-740-01	SHAFT, ROTARY	
419	3-742-822-01	TABLE, LENS	
420	3-742-766-01	RING, ADJUSTMENT	
421	3-742-769-01	HOLDER, EYE CUP	
* 422	A-7071-143-A	TL-18P BOARD, COMPLETE	
* 423	A-7071-144-A	TL-19P BOARD, COMPLETE	
424	3-742-804-01	EYE CUP	
⚠V901	1-546-089-11	CATHODE-RAY TUBE, B/W	

AF-89P

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
	A-7063-082-A	AF-89P BOARD, COMPLETE			
		**********************			
			(Ref.No 1000 Series)		
		(CAPACITOR)			
C801	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C802	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C803	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C804	1-164-634-11	CERAMIC CHIP	1uF		16V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C807	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C808	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C809	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C810	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C811	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C812	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C813	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C814	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C817	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C818	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C819	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C820	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C821	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C822	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C823	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C824	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C825	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C826	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C827	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C828	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C829	1-164-634-11	CERAMIC CHIP	1uF		16V
C832	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C833	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C834	1-126-217-11	ELECT CHIP	15uF	20%	10V
C835	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C837	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C839	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C840	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-162-974-11	CERAMIC CHIP	0.01uF		50V
		(CONNECTOR)			
* CN801	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P			

Ref. No.	Part No.	Description				Remark
		(DIODE)				
D801	8-719-404-46	DIODE	MA110			
		(IC)				
IC801	8-752-334-68	IC	CXD1205R			
IC802	8-752-057-60	IC	CXA1516M-T3			
IC803	8-752-334-49	IC	CXD1172AM			
IC804	8-759-998-96	IC	LM324D			
IC805	8-759-998-96	IC	LM324D			
		(COIL)				
L801	1-410-655-31	INDUCTOR CHIP	120uH			
		(TRANSISTOR)				
Q801	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q802	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q806	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q807	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q808	8-729-230-63	TRANSISTOR	2SC4116-YG			
Q809	8-729-402-45	TRANSISTOR	UN5212			
		(RESISTOR)				
R801	1-216-681-11	METAL CHIP	18K	0.5%	1/10W	
R802	1-216-681-11	METAL CHIP	18K	0.5%	1/10W	
R803	1-216-677-11	METAL CHIP	12K	0.5%	1/10W	
R804	1-216-677-11	METAL CHIP	12K	0.5%	1/10W	
R805	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R806	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R807	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R808	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R809	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R810	1-216-144-00	METAL CHIP	5.6	5%	1/8W	
R816	1-216-864-11	METAL CHIP	0	5%	1/16W	
R822	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R823	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R833	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R834	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R835	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R836	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R837	1-216-673-11	METAL CHIP	8.2K	0.5%	1/10W	
R838	1-216-691-11	METAL CHIP	47K	0.5%	1/10W	
R839	1-216-673-11	METAL CHIP	8.2K	0.5%	1/10W	

Ref. No.	Part No.	Description				Remark
R840	1-216-691-11	METAL CHIP	47K	0.5%	1/10W	
R842	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R843	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R844	1-216-819-11	METAL CHIP	680	5%	1/16W	
R845	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R846	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R847	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R848	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R849	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R850	1-216-818-11	METAL CHIP	560	5%	1/16W	
R851	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R852	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R853	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R854	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R858	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R860	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R862	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R863	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R865	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R866	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R867	1-216-813-11	METAL CHIP	220	5%	1/16W	
R868	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R870	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R871	1-216-833-11	METAL CHIP	10K	5%	1/16W	

(FLEXIBLE BOAR)

Ref. No.	Part No.	Description
W801	1-643-061-11	FP-496 FLEXIBLE BOARD

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* A-7062-180-A AS-22P BOARD, COMPLETE

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(Ref.No 7000 Series)

(CAPACITOR)

Ref. No.	Part No.	Description				Remark
C231	1-126-160-11	ELECT	1uF	20%	50V	
C232	1-124-584-00	ELECT	100uF	20%	10V	
C233	1-124-584-00	ELECT	100uF	20%	10V	
C234	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C235	1-126-160-11	ELECT	1uF	20%	50V	
C236	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C237	1-126-162-11	ELECT	3.3uF	20%	50V	
C238	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C239	1-124-584-00	ELECT	100uF	20%	10V	
C240	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C241	1-124-584-00	ELECT	100uF	20%	10V	
C245	1-126-157-11	ELECT	10uF	20%	16V	
C246	1-124-584-00	ELECT	100uF	20%	10V	
C611	1-126-162-11	ELECT	3.3uF	20%	50V	
C612	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C613	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C614	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C615	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C616	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C617	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C618	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C619	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C620	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C621	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C622	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C623	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C624	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C625	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C630	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C633	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C634	1-124-239-00	ELECT	6.8uF	20%	10V	
C635	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C636	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C637	1-126-154-11	ELECT	47uF	20%	6.3V	
C638	1-163-111-00	CERAMIC CHIP	56PF	5%	50V	
C639	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C640	1-126-154-11	ELECT	47uF	20%	6.3V	
C641	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C642	1-126-153-11	ELECT	22uF	20%	6.3V	
C643	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C644	1-124-967-11	ELECT	10uF	20%	10V	
C645	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C646	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C647	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C648	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C649	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C650	1-126-157-11	ELECT	10uF	20%	16V	
C651	1-126-157-11	ELECT	10uF	20%	16V	
C652	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C653	1-124-967-11	ELECT	10uF	20%	10V	
C654	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C655	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C656	1-126-160-11	ELECT	1uF	20%	50V	
C657	1-126-160-11	ELECT	1uF	20%	50V	
C658	1-126-160-11	ELECT	1uF	20%	50V	
C659	1-126-160-11	ELECT	1uF	20%	50V	
C660	1-126-160-11	ELECT	1uF	20%	50V	
C661	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C662	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V	
C663	1-163-137-00	CERAMIC CHIP	680PF	5%	50V	
C664	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C665	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C666	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C668	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C669	1-163-038-00	CERAMIC CHIP	0.1uF		25V	

Ref. No.	Part No.	Description			Remark
C670	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C671	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C701	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C702	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C703	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C704	1-124-465-00	ELECT	0.47uF	20%	50V
C705	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C706	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C707	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C708	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C710	1-124-584-00	ELECT	100uF	20%	10V
C711	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C712	1-124-257-00	ELECT	2.2uF	20%	50V
C713	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C714	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C715	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C716	1-124-229-00	ELECT	33uF	20%	10V
C717	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C718	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C719	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C720	1-162-587-11	CERAMIC CHIP	0.039uF	10%	25V
C721	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C722	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C723	1-126-160-11	ELECT	1uF	20%	50V
C724	1-126-157-11	ELECT	10uF	20%	16V
C725	1-126-157-11	ELECT	10uF	20%	16V
C726	1-126-153-11	ELECT	22uF	20%	6.3V
C727	1-124-239-00	ELECT	6.8uF	20%	10V
C729	1-126-163-11	ELECT	4.7uF	20%	50V
C730	1-126-153-11	ELECT	22uF	20%	6.3V
C731	1-124-584-00	ELECT	100uF	20%	10V
C732	1-124-257-00	ELECT	2.2uF	20%	50V
C734	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C735	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C736	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C737	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C738	1-124-584-00	ELECT	100uF	20%	10V
C739	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C740	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C741	1-126-154-11	ELECT	47uF	20%	6.3V
C742	1-124-239-00	ELECT	6.8uF	20%	10V
C743	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C744	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C745	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C746	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C747	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C748	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C749	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C750	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C751	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C752	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C753	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C754	1-124-465-00	ELECT	0.47uF	20%	50V
C755	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C756	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C757	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C758	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C760	1-124-584-00	ELECT	100uF	20%	10V
C761	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C762	1-124-257-00	ELECT	2.2uF	20%	50V
C763	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C764	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C765	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C766	1-124-229-00	ELECT	33uF	20%	10V
C767	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C768	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C769	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C770	1-162-587-11	CERAMIC CHIP	0.039uF	10%	25V
C771	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C772	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C773	1-126-160-11	ELECT	1uF	20%	50V
C774	1-126-157-11	ELECT	10uF	20%	16V
C775	1-126-157-11	ELECT	10uF	20%	16V
C776	1-126-153-11	ELECT	22uF	20%	6.3V
C777	1-124-239-00	ELECT	6.8uF	20%	10V
C779	1-126-163-11	ELECT	4.7uF	20%	50V
C780	1-126-153-11	ELECT	22uF	20%	6.3V
C781	1-124-584-00	ELECT	100uF	20%	10V
C782	1-124-257-00	ELECT	2.2uF	20%	50V
C783	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C784	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C785	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C786	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C787	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C788	1-124-584-00	ELECT	100uF	20%	10V
C789	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C790	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C791	1-126-154-11	ELECT	47uF	20%	6.3V
C792	1-124-239-00	ELECT	6.9uF	20%	10V
C793	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C794	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C795	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C796	1-126-162-11	ELECT	3.3uF	20%	50V
C797	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN231	1-565-880-11	PIN, CONNECTOR (PC BOARD) 8P			
CN232	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN701	1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P			
* CN702	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P			
* CN703	1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P			

Ref. No.	Part No.	Description	Remark
		(DIODE)	
D701	8-719-400-18	DIODE MA152WK	
		(FILTER)	
FL701	1-236-550-11	BPF (1.5MHz)	
FL702	1-236-551-11	BPF (1.7MHz)	
		(IC)	
IC231	8-759-603-27	IC M5201FP	
IC232	8-759-701-02	IC NJM2073M	
IC701	8-752-033-01	IC CXA1237AR	
IC702	8-752-033-01	IC CXA1237AR	
IC703	8-759-998-98	IC LM358D	
IC704	8-759-008-67	IC MC14066BF	
IC705	8-759-998-98	IC LM358D	
IC706	8-759-998-98	IC LM358D	
IC707	8-759-008-67	IC MC14066BF	
IC708	8-752-334-42	IC CXD2106Q	
		(COIL)	
L231	1-410-138-11	INDUCTOR 4.7uH	
L701	1-408-948-00	INDUCTOR 220uH	
L702	1-408-948-00	INDUCTOR 220uH	
L703	1-408-970-21	INDUCTOR 10uH	
L705	1-408-978-21	INDUCTOR 47uH	
L706	1-408-978-21	INDUCTOR 47uH	
L707	1-408-978-21	INDUCTOR 47uH	
L708	1-410-384-31	INDUCTOR CHIP 18uH	
L709	1-408-978-21	INDUCTOR 47uH	
		(TRANSISTOR)	
Q231	8-729-805-25	TRANSISTOR 2SB1121-S	
Q232	8-729-901-01	TRANSISTOR DTC144EK	
Q233	8-729-901-01	TRANSISTOR DTC144EK	
Q234	8-729-902-XX	TRANSISTOR DTC114TK-T146	
Q235	8-729-902-93	TRANSISTOR FMG4	
Q701	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q703	8-729-901-01	TRANSISTOR DTC144EK	
Q704	8-729-220-93	TRANSISTOR 2SK209-G	
Q705	8-729-900-51	TRANSISTOR DTA114TK	
Q706	8-729-901-01	TRANSISTOR DTC144EK	
Q707	8-729-901-06	TRANSISTOR DTA144EK	
Q708	8-729-900-51	TRANSISTOR DTA114TK	
Q709	8-729-901-01	TRANSISTOR DTC144EK	
Q710	8-729-901-06	TRANSISTOR DTA144EK	
Q711	8-729-901-01	TRANSISTOR DTC144EK	
Q712	8-729-901-01	TRANSISTOR DTC144EK	
Q713	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q714	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q715	8-729-901-01	TRANSISTOR DTC144EK	
Q716	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q717	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q718	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q719	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q720	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q721	8-729-216-22	TRANSISTOR 2SA1162-G	
Q723	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q724	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q725	8-729-903-10	TRANSISTOR FMW1	
Q726	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q727	8-729-216-22	TRANSISTOR 2SA1162-G	
Q728	8-729-901-06	TRANSISTOR DTA144EK	
Q729	8-729-903-97	TRANSISTOR FMS1FE	
Q730	8-729-903-10	TRANSISTOR FMW1	
Q732	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q733	8-729-100-66	TRANSISTOR 2SC1623-L6	
		(RESISTOR)	
R231	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R232	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R233	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R234	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R235	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R236	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R237	1-216-025-00	METAL CHIP 100 5% 1/10W	
R238	1-216-295-00	METAL CHIP 0 5% 1/10W	
R239	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R240	1-216-045-00	METAL CHIP 680 5% 1/10W	
R242	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R243	1-216-134-00	METAL CHIP 2.2 5% 1/8W	
R245	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R246	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R598	1-216-295-00	METAL CHIP 0 5% 1/10W	
R599	1-216-295-00	METAL CHIP 0 5% 1/10W	
R605	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R606	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R607	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R608	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R609	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R611	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R612	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R613	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R614	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R615	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R616	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R617	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R618	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R620	1-216-295-00	METAL CHIP 0 5% 1/10W	
R621	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R622	1-216-085-00	METAL CHIP 33K 5% 1/10W	

Ref. No.	Part No.	Description				Remark
R624	1-216-295-00	METAL CHIP	0	5%	1/10W	
R625	1-216-295-00	METAL CHIP	0	5%	1/10W	
R626	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R627	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R628	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R630	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R631	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R632	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R633	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R634	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R635	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R636	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R637	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R638	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R639	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R640	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R641	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R642	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R643	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R644	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R645	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R646	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R647	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R648	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R649	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R650	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R652	1-216-295-00	METAL CHIP	0	5%	1/10W	
R653	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R654	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R655	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R656	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R657	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R658	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R659	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R660	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R661	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R662	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R663	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R664	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R665	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R666	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R667	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R668	1-216-295-00	METAL CHIP	0	5%	1/10W	
R670	1-216-295-00	METAL CHIP	0	5%	1/10W	
R672	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R673	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R674	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R675	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R676	1-216-295-00	METAL CHIP	0	5%	1/10W	
R678	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R679	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R680	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R681	1-216-295-00	METAL CHIP	0	5%	1/10W	
R682	1-216-295-00	METAL CHIP	0	5%	1/10W	
R685	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R686	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R687	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R688	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R689	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R690	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R691	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R692	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R693	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R694	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R695	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R696	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R697	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R698	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R699	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R700	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R701	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R702	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R703	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R704	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R705	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R706	1-216-649-11	METAL CHIP	820	0.5%	1/10W	
R707	1-216-649-11	METAL CHIP	820	0.5%	1/10W	
R708	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R709	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R710	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R711	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R712	1-216-045-00	METAL CHIP	680	5%	1/10W	
R713	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R714	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R715	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R716	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R717	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R719	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R720	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R721	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R723	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R724	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R725	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R727	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R728	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R729	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R730	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R731	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R732	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R733	1-216-081-00	METAL CHIP	22K	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R734	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R735	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R736	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R737	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R738	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R739	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R740	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R741	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R742	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R743	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R744	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R745	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R746	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R747	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R748	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R749	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R750	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R751	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R752	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R753	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R754	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R755	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R756	1-216-647-11	METAL CHIP 680 0.5% 1/10W	
R757	1-216-647-11	METAL CHIP 680 0.5% 1/10W	
R758	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R759	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R760	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R761	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R762	1-216-045-00	METAL CHIP 680 5% 1/10W	
R763	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R764	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R765	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R766	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R767	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R769	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R770	1-216-295-00	METAL CHIP 0 5% 1/10W	
R771	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R772	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R773	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R774	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R775	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R776	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R777	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R778	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R779	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R780	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R781	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R782	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R783	1-216-295-00	METAL CHIP 0 5% 1/10W	
R784	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R785	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R786	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R787	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R788	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R789	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R790	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R791	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R792	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R793	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R794	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R795	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R796	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R797	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R798	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R799	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description	Remark
RV701	1-238-223-11	RES, ADJ, METAL 10K	
RV702	1-230-871-11	RES, ADJ, METAL 22K	
RV703	1-238-223-11	RES, ADJ, METAL 10K	
RV704	1-230-874-11	RES, ADJ, METAL 100K	
RV706	1-230-873-11	RES, ADJ, METAL 47K	
RV707	1-230-873-11	RES, ADJ, METAL 47K	
RV710	1-230-873-11	RES, ADJ, METAL 47K	
RV712	1-230-873-11	RES, ADJ, METAL 47K	
RV713	1-238-222-11	RES, ADJ, METAL 4.7K	
RV714	1-230-869-11	RES, ADJ, METAL 4.7K	

(CRYSTAL)

Ref. No.	Part No.	Description	Remark
X701	1-579-050-11	OSCILLATOR, CRYSTAL 149.475KHz	

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A-7071-562-A CC-73P BOARD, COMPLETE
****
(Ref.No 5000 Series)

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN701	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN702	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	
CN703	1-566-531-11	CONNECTOR, FPC (ZIF) 15P	

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A-7063-081-A CD-82P BOARD, COMPLETE
****
(Ref.No 1000 Series)

A-7068-194-A DT-77FB BOARD, COMPLETE (HIC)
3-744-718-01 HOLDER (10), C

Ref. No.	Part No.	Description			Remark
		(CAPACITOR)			
C101	1-126-200-11	ELECT CHIP	10uF	20%	35V
C102	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C103	1-162-638-11	CERAMIC CHIP	1uF		16V
C105	1-126-607-11	ELECT CHIP	47uF	20%	4V
C107	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C110	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C111	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C112	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C113	1-128-013-11	ELECT CHIP	1uF	20%	50V
C114	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C115	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C121	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C122	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C123	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C125	1-126-607-11	ELECT CHIP	47uF	20%	4V
C126	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C127	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C128	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C129	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C130	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C131	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C135	1-162-638-11	CERAMIC CHIP	1uF		16V
C136	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C137	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C138	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C140	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C141	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C142	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C144	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C147	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C148	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C190	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C191	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
		(CONNECTOR)			
* CN101	1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P			
		(TRIMMER)			
CT121	1-141-424-11	CAP, ADJ			
CT122	1-141-356-11	CAP, ADJ (6P)			
		(DIODE)			
D101	8-719-404-46	DIODE	MA110		
D102	8-719-800-76	DIODE	1SS226		
D122	8-719-820-05	DIODE	1SS181		
D123	8-719-404-46	DIODE	MA110		
D124	8-719-820-05	DIODE	1SS181		
D125	8-719-949-46	DIODE	1T32		

Ref. No.	Part No.	Description			Remark
D128	8-719-404-46	DIODE	MA110		
		(IC)			
IC121	8-752-326-08	IC	CXD1159Q		
		(COIL)			
L101	1-412-063-21	INDUCTOR CHIP	68uH		
L121	1-412-058-11	INDUCTOR CHIP	10uH		
L122	1-412-058-11	INDUCTOR CHIP	10uH		
L123	1-410-381-11	INDUCTOR CHIP	10uH		
		(TRANSISTOR)			
Q101	8-729-012-35	TRANSISTOR	2SK711-BL/V-TE85L		
Q102	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q121	8-729-402-84	TRANSISTOR	XN4601		
Q122	8-729-402-78	TRANSISTOR	XN6401		
Q123	8-729-402-19	TRANSISTOR	XN6501		
Q125	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q129	8-729-230-60	TRANSISTOR	2SA1586-YG		
Q130	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q131	8-729-402-84	TRANSISTOR	XN4601		
Q132	8-729-402-84	TRANSISTOR	XN4601		
Q133	8-729-402-84	TRANSISTOR	XN4601		
Q135	8-729-402-84	TRANSISTOR	XN4601		
Q136	8-729-402-45	TRANSISTOR	UN5212		
		(RESISTOR)			
R101	1-216-849-11	METAL CHIP	220K	5%	1/16W
R102	1-216-839-11	METAL CHIP	33K	5%	1/16W
R103	1-216-816-11	METAL CHIP	390	5%	1/16W
R104	1-216-809-11	METAL CHIP	100	5%	1/16W
R105	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R106	1-216-864-11	METAL CHIP	0	5%	1/16W
R110	1-216-839-11	METAL CHIP	33K	5%	1/16W
R111	1-216-839-11	METAL CHIP	33K	5%	1/16W
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R114	1-216-845-11	METAL CHIP	100K	5%	1/16W
R115	1-216-821-11	METAL CHIP	1K	5%	1/16W
R116	1-216-821-11	METAL CHIP	1K	5%	1/16W
R117	1-216-821-11	METAL CHIP	1K	5%	1/16W
R120	1-216-813-11	METAL CHIP	220	5%	1/16W
R121	1-216-835-11	METAL CHIP	15K	5%	1/16W
R122	1-216-857-11	METAL CHIP	1M	5%	1/16W
R124	1-216-839-11	METAL CHIP	33K	5%	1/16W
R125	1-216-845-11	METAL CHIP	100K	5%	1/16W
R126	1-216-837-11	METAL CHIP	22K	5%	1/16W
R127	1-216-820-11	METAL CHIP	820	5%	1/16W
R128	1-216-843-11	METAL CHIP	68K	5%	1/16W
R129	1-216-833-11	METAL CHIP	10K	5%	1/16W
R130	1-216-835-11	METAL CHIP	15K	5%	1/16W

Ref. No.	Part No.	Description				Remark
R131	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R132	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R133	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R136	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R138	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R141	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R142	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R143	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R148	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R149	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R154	1-216-864-11	METAL CHIP	0	5%	1/16W	
R156	1-216-809-11	METAL CHIP	100	5%	1/16W	
R157	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R158	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W	
R159	1-216-809-11	METAL CHIP	100	5%	1/16W	
R160	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R161	1-216-809-11	METAL CHIP	100	5%	1/16W	
R162	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R163	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R164	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R165	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R166	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R167	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R168	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R169	1-216-864-11	METAL CHIP	0	5%	1/16W	
R171	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R172	1-216-813-11	METAL CHIP	220	5%	1/16W	
R173	1-216-813-11	METAL CHIP	220	5%	1/16W	
R181	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R182	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R184	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R185	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R186	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R188	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R189	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R190	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R191	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R192	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R193	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R196	1-216-813-11	METAL CHIP	220	5%	1/16W	
R198	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R200	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R201	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W	
R202	1-216-643-11	METAL CHIP	470	0.5%	1/10W	
R203	1-216-681-11	METAL CHIP	18K	0.5%	1/10W	
R204	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W	
R205	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W	
R206	1-216-681-11	METAL CHIP	18K	0.5%	1/10W	
R207	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R208	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R209	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R210	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R215	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R216	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R217	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R218	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R220	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R221	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R222	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R230	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R233	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R237	1-216-296-00	METAL CHIP	0	5%	1/8W	
R238	1-216-296-00	METAL CHIP	0	5%	1/8W	
R239	1-216-296-00	METAL CHIP	0	5%	1/8W	

(FLEXIBLE BOARD)

W102	1-633-975-11	FP-268 FLEXIBLE BOARD

(CRYSTAL)

X121	1-579-076-11	VIBRATOR, CRYSTAL
X122	1-567-733-11	VIBRATOR, CRYSTAL

****

A-7071-567-A CK-57P BOARD, COMPLETE
****
(Ref.No 9000 Series)

(CONNECTOR)

CN701	1-566-531-11	CONNECTOR, FPC (ZIF) 15P
CN702	1-580-056-21	PIN, CONNECTOR 3P

(DIODE)

D701	8-719-951-22	IC IMN10
D702	8-719-951-22	IC IMN10
D703	8-719-951-22	IC IMN10
D704	8-719-951-22	IC IMN10

(SWITCH)

S701	1-571-787-11	SWITCH, TACTILE (FADER/OVERLAP)
S702	1-571-787-11	SWITCH, TACTILE (DIGITAL ZOOM)
S703	1-554-592-21	SWITCH, KEY BOARD (EDIT SEARCH +)
S704	1-554-592-21	SWITCH, KEY BOARD (EDIT SEARCH -)
S705	1-571-787-11	SWITCH, TACTILE (Pin S)
S706	1-571-787-11	SWITCH, TACTILE (TITLE 1)
S707	1-571-787-11	SWITCH, TACTILE (TITLE 2)
S708	1-571-787-11	SWITCH, TACTILE (MEMORY)
S709	1-571-787-11	SWITCH, TACTILE (COLOR/MODE)
S710	1-571-787-11	SWITCH, TACTILE (PICTURE)

Ref. No.	Part No.	Description			Remark
**					
*	1-633-597-21	DC-25P BOARD (Ref. No 9000 Series) ************			
		(JACK)			
J610	1-569-398-21	JACK (DC IN 7.5V)			
**					
*	A-7062-187-A	DI-21P BOARD, COMPLETE ********************* (Ref. No 3000 Series)			
	3-831-441-XX	CUSHION (5)			
		(CAPACITOR)			
C620	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C621	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C623	1-124-779-00	ELECT CHIP	10uF	20%	16v
C624	1-124-779-00	ELECT CHIP	10uF	20%	16v
C626	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C627	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C629	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C630	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C631	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C634	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C635	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C636	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C637	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C639	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C640	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C641	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C642	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C643	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C644	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C645	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C646	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C647	1-126-193-11	ELECT	1uF	20%	50V
C648	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C649	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C650	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C651	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C652	1-126-193-11	ELECT	1uF	20%	50V
C653	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C654	1-163-098-00	CERAMIC CHIP	16PF	5%	50V
C655	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C656	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C657	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C660	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C661	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C663	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C665	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C666	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C667	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C669	1-126-193-11	ELECT	1uF	20%	50V
C671	1-163-098-00	CERAMIC CHIP	16PF	5%	50V
C673	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C674	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C675	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C676	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C677	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C678	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C680	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C682	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C683	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C685	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C686	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C687	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C688	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C689	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C690	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C691	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C692	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C693	1-124-779-00	ELECT CHIP	10uF	20%	16v
C694	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C695	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C696	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C697	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C698	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C699	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C700	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C701	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C702	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C703	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C705	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C706	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C707	1-124-779-00	ELECT CHIP	10uF	20%	16v
C708	1-163-110-00	CERAMIC CHIP	51PF	5%	50V
C709	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C710	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C711	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C712	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C713	1-126-189-11	ELECT	0.22uF	20%	50V
C714	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C715	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C716	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C717	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C718	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C720	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C721	1-135-161-21	TANTALUM CHIP	22uF	10%	10V

Ref. No.	Part No.	Description			Remark
C722	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C723	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C724	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C725	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C726	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C727	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C729	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C730	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C731	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C732	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C733	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C734	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C735	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C736	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C737	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C738	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C739	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C740	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C741	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C742	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C743	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C744	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C745	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C746	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C747	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C748	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C749	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C750	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C751	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C752	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C753	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C754	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C755	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C756	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C757	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C758	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C759	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C760	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C761	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C762	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C763	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C764	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C765	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C766	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C767	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C768	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C769	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C770	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C771	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C772	1-163-031-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C773	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C774	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C775	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C776	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C777	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C778	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C779	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C780	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C781	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C783	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C785	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C786	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C787	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C788	1-163-108-00	CERAMIC CHIP	43PF	5%	50V
C789	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C791	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C793	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C794	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C798	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C799	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C800	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		(CONNECTOR)			
* CN601	1-566-190-11	PIN, CONNECTOR (PC BOARD)	11P		
* CN602	1-566-187-11	PIN, CONNECTOR (PC BOARD)	8P		
* CN603	1-565-882-11	PIN, CONNECTOR (PC BOARD)	10P		
* CN604	1-565-876-11	PIN, CONNECTOR (PC BOARD)	4P		
CN605	1-506-482-11	CONNECTOR	3P, MALE		
		(DIODE)			
D701	8-713-300-88	DIODE	1T33C-01		
D702	8-719-949-46	DIODE	1T32		
D703	8-719-988-37	DIODE	HVU350		
D704	8-719-400-18	DIODE	MA152WK		
D707	8-719-940-45	DIODE	DWA010		
D708	8-719-940-45	DIODE	DWA010		
D712	8-719-400-18	DIODE	MA152WK		
D713	8-719-400-18	DIODE	MA152WK		
		(FERRITE BEAD)			
FB601	1-543-256-11	BEAD, FERRITE			
FB602	1-543-256-11	BEAD, FERRITE			
FB603	1-543-256-11	BEAD, FERRITE			
FB604	1-543-256-11	BEAD, FERRITE			
FB605	1-543-256-11	BEAD, FERRITE			
FB606	1-543-256-11	BEAD, FERRITE			
		(FILTER)			
FL601	1-421-927-21	FILTER, NOISE			
FL602	1-421-927-21	FILTER, NOISE			

Ref. No.	Part No.	Description	Remark
		(IC)	
IC701	8-759-987-17	IC CXD1226Q	
IC702	8-759-987-18	IC CXD1227Q	
IC703	8-759-987-19	IC CXD1228Q	
IC704	8-759-987-20	IC CXD1229Q	
IC705	8-752-340-75	IC CXK1206AM	
IC706	8-752-340-75	IC CXK1206AM	
IC707	8-752-340-75	IC CXK1206AM	
IC708	8-752-334-55	IC CXD1175AM	
IC709	8-752-334-55	IC CXD1175AM	
IC710	8-752-032-96	IC CXA1106M	
IC711	8-752-032-96	IC CXA1106M	
IC712	8-759-926-23	IC SN74HC163ANS	
IC713	8-759-011-65	IC MC74HC4053F	
IC714	8-759-011-65	IC MC74HC4053F	
IC715	8-759-239-34	IC TC74HC4538AF	
IC716	8-759-206-28	IC MC74HC123AF	
IC717	8-759-916-25	IC SN74HC32AN	
IC718	8-759-925-76	IC SN74HC08ANS	
IC719	8-759-710-29	IC NJM2235M	
IC720	8-759-710-86	IC NJM2233BM	
		(COIL)	
L601	1-410-389-31	INDUCTOR CHIP 47uH	
L602	1-410-389-31	INDUCTOR CHIP 47uH	
L604	1-408-785-21	INDUCTOR CHIP 47uH	
L605	1-408-785-21	INDUCTOR CHIP 47uH	
L606	1-408-785-21	INDUCTOR CHIP 47uH	
L607	1-410-393-11	INDUCTOR CHIP 100uH	
L608	1-410-389-31	INDUCTOR CHIP 47uH	
L609	1-410-383-31	INDUCTOR CHIP 15uH	
L610	1-410-382-31	INDUCTOR CHIP 12uH	
L611	1-410-377-31	INDUCTOR CHIP 4.7uH	
L614	1-408-785-21	INDUCTOR CHIP 47uH	
L615	1-408-785-21	INDUCTOR CHIP 47uH	
L616	1-410-389-31	INDUCTOR CHIP 47uH	
L617	1-410-656-11	INDUCTOR CHIP 150uH	
L618	1-410-380-31	INDUCTOR CHIP 8.2uH	
L619	1-410-389-31	INDUCTOR CHIP 47uH	
L620	1-410-382-31	INDUCTOR CHIP 12uH	
L621	1-410-386-11	INDUCTOR CHIP 27uH	
L622	1-410-389-31	INDUCTOR CHIP 47uH	
L623	1-410-389-31	INDUCTOR CHIP 47uH	
L624	1-410-389-31	INDUCTOR CHIP 47uH	
L625	1-410-388-21	INDUCTOR CHIP 39uH	
L626	1-410-388-21	INDUCTOR CHIP 39uH	
L700	1-410-377-31	INDUCTOR CHIP 4.7uH	
		(TRANSISTOR)	
Q601	8-729-120-28	TRANSISTOR 2SC1623-L5L6	

Ref. No.	Part No.	Description	Remark
Q602	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q603	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q604	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q605	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q606	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q607	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q608	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q609	8-729-216-22	TRANSISTOR 2SA1162-G	
Q610	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q611	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q612	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q613	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q614	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q615	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q616	8-729-109-44	TRANSISTOR 2SK94-X4	
Q617	8-729-901-01	TRANSISTOR DTC144EK	
Q618	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q619	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q620	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q621	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q622	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q623	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q624	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q625	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q626	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q627	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q628	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q629	8-729-901-01	TRANSISTOR DTC144EK	
Q630	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q631	8-729-102-08	TRANSISTOR 2SC2223-F14	
Q632	8-729-102-08	TRANSISTOR 2SC2223-F14	
Q634	8-729-904-07	TRANSISTOR FMG2	
Q635	8-729-901-01	TRANSISTOR DTC144EK	
Q636	8-729-216-22	TRANSISTOR 2SA1162-G	
Q637	8-729-122-63	TRANSISTOR 2SA1226-E4	
Q638	8-729-122-63	TRANSISTOR 2SA1226-E4	
		(RESISTOR)	
R601	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R602	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R603	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R605	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R606	1-216-041-00	METAL CHIP 470 5% 1/10W	
R607	1-216-041-00	METAL CHIP 470 5% 1/10W	
R608	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R609	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R610	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R611	1-216-295-00	METAL CHIP 0 5% 1/10W	
R612	1-216-295-00	METAL CHIP 0 5% 1/10W	
R613	1-216-049-00	METAL CHIP 1K 5% 1/10W	

Ref. No.	Part No.	Description				Remark
R614	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R615	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R616	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R617	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R618	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R619	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R620	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R621	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R624	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R625	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R626	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R627	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R628	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R629	1-216-041-00	METAL CHIP	470	5%	1/10W	
R630	1-216-037-00	METAL CHIP	330	5%	1/10W	
R631	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R632	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R633	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R634	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R635	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R637	1-216-025-00	METAL CHIP	100	5%	1/10W	
R638	1-216-025-00	METAL CHIP	100	5%	1/10W	
R639	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R640	1-216-039-00	METAL CHIP	390	5%	1/10W	
R641	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R642	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R643	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R644	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R645	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R646	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R647	1-216-025-00	METAL CHIP	100	5%	1/10W	
R648	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R649	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R650	1-216-041-00	METAL CHIP	470	5%	1/10W	
R652	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R653	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R654	1-216-019-00	METAL CHIP	56	5%	1/10W	
R655	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R656	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R657	1-216-021-00	METAL CHIP	68	5%	1/10W	
R658	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R659	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R660	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R661	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R662	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R663	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R664	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R665	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R666	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R672	1-216-295-00	METAL CHIP	0	5%	1/10W	
R674	1-216-295-00	METAL CHIP	0	5%	1/10W	
R675	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R676	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R677	1-216-295-00	METAL CHIP	0	5%	1/10W	
R679	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R680	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R681	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R682	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R686	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R687	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R688	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R689	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R690	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R691	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R692	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R693	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R694	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R695	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R696	1-216-009-00	METAL CHIP	22	5%	1/10W	
R699	1-216-295-00	METAL CHIP	0	5%	1/10W	
R702	1-216-295-00	METAL CHIP	0	5%	1/10W	
R703	1-216-029-00	METAL CHIP	150	5%	1/10W	
R704	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R705	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R706	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R708	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R712	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R713	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R715	1-216-295-00	METAL CHIP	0	5%	1/10W	
R716	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R718	1-216-295-00	METAL CHIP	0	5%	1/10W	
R719	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R721	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R722	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R726	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R727	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R728	1-216-295-00	METAL CHIP	0	5%	1/10W	
R729	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R730	1-216-041-00	METAL CHIP	470	5%	1/10W	
R731	1-216-035-00	METAL CHIP	270	5%	1/10W	
R732	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R733	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R734	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R735	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R736	1-216-041-00	METAL CHIP	470	5%	1/10W	
R737	1-216-037-00	METAL CHIP	330	5%	1/10W	
R738	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R739	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R740	1-216-031-00	METAL CHIP	180	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R741	1-216-041-00	METAL CHIP	470	5%	1/10W	
R742	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R743	1-216-025-00	METAL CHIP	100	5%	1/10W	
R744	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R745	1-216-041-00	METAL CHIP	470	5%	1/10W	
R746	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R747	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R748	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R749	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R750	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R755	1-216-295-00	METAL CHIP	0	5%	1/10W	
R756	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R757	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R758	1-216-041-00	METAL CHIP	470	5%	1/10W	
R759	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R760	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R761	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R762	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R763	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R764	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R765	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R767	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R768	1-216-025-00	METAL CHIP	100	5%	1/10W	
R769	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R770	1-216-025-00	METAL CHIP	100	5%	1/10W	
R771	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R772	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R773	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R774	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R775	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R776	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R777	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R778	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R779	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R780	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R781	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R782	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R783	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R784	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R785	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R786	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R787	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R788	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R789	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R790	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R791	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R792	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R793	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R795	1-216-295-00	METAL CHIP	0	5%	1/10W	
R796	1-216-295-00	METAL CHIP	0	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R799	1-216-295-00	METAL CHIP	0	5%	1/10W	
R800	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R801	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R802	1-216-295-00	METAL CHIP	0	5%	1/10W	
R803	1-216-295-00	METAL CHIP	0	5%	1/10W	
R805	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R806	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R807	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R808	1-216-011-00	METAL CHIP	27	5%	1/10W	
R809	1-216-041-00	METAL CHIP	470	5%	1/10W	
R810	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R811	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R812	1-216-019-00	METAL CHIP	56	5%	1/10W	
R813	1-216-041-00	METAL CHIP	470	5%	1/10W	
R814	1-216-025-00	METAL CHIP	100	5%	1/10W	
R815	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R816	1-216-025-00	METAL CHIP	100	5%	1/10W	
R817	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R819	1-216-295-00	METAL CHIP	0	5%	1/10W	
R825	1-216-295-00	METAL CHIP	0	5%	1/10W	
R826	1-216-295-00	METAL CHIP	0	5%	1/10W	
R827	1-216-295-00	METAL CHIP	0	5%	1/10W	
R828	1-216-295-00	METAL CHIP	0	5%	1/10W	
R829	1-216-295-00	METAL CHIP	0	5%	1/10W	
R830	1-216-295-00	METAL CHIP	0	5%	1/10W	
R831	1-216-295-00	METAL CHIP	0	5%	1/10W	
R832	1-216-295-00	METAL CHIP	0	5%	1/10W	
R833	1-216-295-00	METAL CHIP	0	5%	1/10W	
R834	1-216-295-00	METAL CHIP	0	5%	1/10W	
R835	1-216-295-00	METAL CHIP	0	5%	1/10W	
R836	1-216-295-00	METAL CHIP	0	5%	1/10W	
R837	1-216-295-00	METAL CHIP	0	5%	1/10W	
R838	1-216-295-00	METAL CHIP	0	5%	1/10W	
R839	1-216-295-00	METAL CHIP	0	5%	1/10W	
R840	1-216-295-00	METAL CHIP	0	5%	1/10W	
R841	1-216-295-00	METAL CHIP	0	5%	1/10W	
R842	1-216-295-00	METAL CHIP	0	5%	1/10W	
R843	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R844	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R846	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R847	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R848	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R850	1-216-296-00	METAL CHIP	0	5%	1/8W	
R851	1-216-295-00	METAL CHIP	0	5%	1/10W	
R853	1-216-296-00	METAL CHIP	0	5%	1/8W	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description	Remark
RV602	1-230-866-11	RES, ADJ, METAL 470	
RV603	1-230-866-11	RES, ADJ, METAL 470	

(TRIMMER)

Ref. No.	Part No.	Description	Remark
VC701	1-141-311-11	CAP, TRIMMER 20PF	
VC702	1-141-422-41	CAP, ADJ (20PF)	
VC703	1-141-311-11	CAP, TRIMMER 20PF	
VC704	1-141-422-41	CAP, ADJ (10PF)	

(CRYSTAL)

Ref. No.	Part No.	Description	Remark
X701	1-567-344-21	VIBRATOR, CRYSTAL (VCO)	
X702	1-567-733-11	VIBRATOR, CRYSTAL	
X703	1-577-704-11	VIBRATOR, CRYSTAL	

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A-7071-569-A DK-22P BOARD, COMPLETE
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(Ref.No 8000 Series)

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
* CN761	1-565-884-11	PIN, CONNECTOR (PC BOARD) 12P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D761	8-719-941-09	DIODE DAP202U	
D762	8-719-951-22	DIODE IMN10	
D763	8-719-951-22	DIODE IMN10	
D764	8-719-951-22	DIODE IMN10	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S761	1-553-977-00	SWITCH, SLIDE (DEGITAL EFFECT)	
S762	1-571-787-11	SWITCH, TACTILE (STOPMOTION)	
S763	1-571-787-11	SWITCH, TACTILE (FLASHMOTION)	
S764	1-571-787-11	SWITCH, TACTILE (MULTI)	
S765	1-571-787-11	SWITCH, TACTILE (CLEAR)	
S766	1-571-102-11	SWITCH, SLIDE (INT REC)	
S767	1-571-787-11	SWITCH, TACTILE (SLOW ADJ ▼)	
S768	1-571-787-11	SWITCH, TACTILE (SLOW ADJ ▲)	
S769	1-553-977-00	SWITCH, SLIDE (REC MODE SP/LP)	
S770	1-553-977-00	SWITCH, SLIDE (HI 8 AUTO OFF)	
S771	1-553-977-00	SWITCH, SLIDE (EDIT)	
S772	1-553-977-00	SWITCH, SLIDE (SPEAKER)	
S773	1-553-977-00	SWITCH, SLIDE (COUNTER NORMAL/TIME CODE)	

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A-7063-084-A FD-45P BOARD, COMPLETE
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(Ref.No 8000 Series)

Ref. No.	Part No.	Description	Remark
*	3-674-372-00	HOLDER (A), LED	
*	3-742-775-01	HOLDER, LCD	

(CAPACITOR)

Ref. No.	Part No.	Description	Remark
C211	1-126-204-11	ELECT CHIP 47uF 20% 16V	
C212	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C213	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C214	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C216	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C220	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C224	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C226	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C227	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C228	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C229	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C230	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C242	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C243	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C244	1-163-038-00	CERAMIC CHIP 0.1uF 25V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
* CN203	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P	
* CN205	1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN206	1-566-767-11	PIN, CONNECTOR (PC BOARD) 12P	
CN208	1-580-056-21	PIN, CONNECTOR 3P	
CN209	1-565-531-11	PIN, CONNECTOR (PC BOARD) 6P	
CN211	1-568-165-11	CONNECTOR, FPC (1.0MM)(ZIF)22P	
CN212	1-569-481-11	CONNECTOR, FPC 30P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D201	8-719-920-05	LED SLP281C-50 (DIGITAL)	
D202	8-719-951-22	IC IMN10 (HI-FI)	
D203	8-719-940-45	DIODE DWA010	
D204	8-719-940-45	DIODE DWA010	
D205	8-719-951-22	IC IMN10	
D206	8-719-951-22	IC IMN10	
D207	8-719-404-46	DIODE MA110	
D208	8-719-404-46	DIODE MA110	
D211	8-719-404-46	DIODE MA110	
D212	8-719-938-68	LED GL-3HY8	
D215	8-719-977-34	DIODE DTZ12	
D216	8-719-977-34	DIODE DTZ12	

(IC)

Ref. No.	Part No.	Description	Remark
IC211	8-759-603-27	IC M5201FP	
IC212	8-759-603-27	IC M5201FP	
IC213	8-759-981-82	IC RC3414M	

(LIQUID CRYSTAL)

Ref. No.	Part No.	Description	Remark
ND201	1-809-662-11	DISPLAY PANEL, LIQUID CRYSTAL	

(RESISTOR)

Ref. No.	Part No.	Description	Remark
R206	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R213	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R215	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R216	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R217	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R220	1-216-295-00	METAL CHIP 0 5% 1/10W	
R222	1-216-295-00	METAL CHIP 0 5% 1/10W	
R225	1-216-295-00	METAL CHIP 0 5% 1/10W	
R226	1-216-295-00	METAL CHIP 0 5% 1/10W	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S201	1-571-787-11	SWITCH, TACTILE (DATE (+))	
S202	1-571-787-11	SWITCH, TACTILE (TIME (NEXT))	
S203	1-571-787-11	SWITCH, TACTILE (COUNTER RESET)	
S204	1-571-787-11	SWITCH, TACTILE (ZERO MEN)	
S205	1-553-977-51	SWITCH, SLIDE (AUTO LOCK)	
S206	1-553-977-00	SWITCH, SLIDE (FOCUS AUTO/MANU)	
S207	1-571-787-11	SWITCH, TACTILE (PUSH AUTO)	
S208	1-570-871-11	SWITCH, SLIDE (GAIN 0dB/18dB)	
S209	1-571-361-21	SWITCH, ROTARY (WHT BAL)	
S210	1-571-787-11	SWITCH, TACTILE (◺■◿)	
S211	1-571-361-11	SWITCH, ROTARY (SHUTTER SPEED)	
S212	1-571-787-11	SWITCH, TACTILE (STROBE)	
S213	1-571-787-11	SWITCH, TACTILE (SOLARIZATION)	
S214	1-571-787-11	SWITCH, TACTILE (NR)	
S215	1-571-361-21	SWITCH, ROTARY (EFFECT LEVEL)	
S216	1-571-686-11	SWITCH, TACT (INDEX MARK)	
S220	1-553-977-00	SWITCH, SLIDE (MIC AUTO/MANU)	

(VARIABLE RESISTOR)

Ref. No.	Part No.	Description	Remark
VR201	1-237-776-21	RES, ADJ, CARBON 10K (IRIS CLOSE/AUTO/OPEN)	
VR211	1-238-882-11	RES, VAR, CARBON 22K/22K (REC LEVEL)	
VR212	1-238-881-11	RES, VAR, CARBON 47K/47K (BALANCE)	

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1-628-060-12 FP-89 FLEXIBLE BOARD
****
(Ref. No 5000 Series)

Ref. No.	Part No.	Description	Remark
	1-572-173-11	SWITCH, SLIDE (ENCODER)	
	3-728-869-02	HOLDER, SENSOR	

(DIODE)

Ref. No.	Part No.	Description	Remark
D301	8-719-820-44	PHOTE COUPLER TLP907-0 (SONY2)	

(TRANSISTOR)

Ref. No.	Part No.	Description	Remark
Q301	8-729-906-48	TRANSISTOR EE-TP109	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S901	1-571-099-11	SWITCH (CASETTE DOWN)	

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1-628-061-12 FP-90 FLEXIBLE BOARD
****
(Ref. No 5000 Series)

Ref. No.	Part No.	Description	Remark
	3-728-869-02	HOLDER, SENSOR	

(DIODE)

Ref. No.	Part No.	Description	Remark
D302	8-719-026-04	DIODE GL453JS	
D303	8-719-820-44	PHOTE COUPLER TLP907-0 (SONY2)	

(TRANSISTOR)

Ref. No.	Part No.	Description	Remark
Q302	8-729-906-48	TRANSISTOR EE-TP109	

(SWITCH)

Ref. No.	Part No.	Description	Remark
S902	1-572-298-11	SWITCH, PUSH (ME/MP, MP HG, REC PROOF)	

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* 1-633-596-21 FU-70P BOARD (Ref. No 9000 Series)
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(CAPACITOR)

Ref. No.	Part No.	Description	Remark
C601	1-124-570-11	ELECT 220uF 20% 16V	
C602	1-124-570-11	ELECT 220uF 20% 16V	
C603	1-124-570-11	ELECT 220uF 20% 16V	

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
* CN601	1-566-115-11	CONNECTOR, BOARD TO BOARD 4P	
* CN604	1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN605	1-566-186-11	PIN, CONNECTOR (PC BOARD) 7P	
CN606	1-506-481-11	CONNECTOR 2P, MALE	

(COIL)

Ref. No.	Part No.	Description	Remark
L601	1-410-337-11	INDUCTOR 1uH	
L602	1-410-337-11	INDUCTOR 1uH	
L603	1-410-337-11	INDUCTOR 1uH	
L604	1-410-337-11	INDUCTOR 1uH	
L605	1-410-337-11	INDUCTOR 1uH	
L606	1-410-337-11	INDUCTOR 1uH	

(IC LINK)

Ref. No.	Part No.	Description	Remark
⚠PS601	1-532-841-21	LINK, IC (1.6A)	
⚠PS602	1-532-841-21	LINK, IC (1.6A)	
⚠PS603	1-532-841-21	LINK, IC (1.6A)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
⚠PS604	1-532-841-21	LINK, IC (1.6A)	
⚠PS605	1-532-841-21	LINK, IC (1.6A)	

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A-7071-373-A HJ-11P BOARD, COMPLETE
****
(Ref.No 6000 Series)

Ref. No.	Part No.	Description	Remark
		(CONNECTOR)	
* CN861	1-566-190-11	PIN, CONNECTOR (PC BOARD) 11P	
CN862	1-565-874-11	PIN, CONNECTOR (PC BOARD) 2P	
		(DIODE)	
D863	8-719-106-43	DIODE RD9.1M-B1	
D864	8-719-106-43	DIODE RD9.1M-B1	
D865	8-719-106-43	DIODE RD9.1M-B1	
D866	8-719-106-43	DIODE RD9.1M-B1	
D867	8-719-106-43	DIODE RD9.1M-B1	
D868	8-719-106-43	DIODE RD9.1M-B1	
		(JACK)	
J862	1-562-785-11	JACK (PHONES)	
J863	1-562-785-21	JACK (NAR.MIC)	
		(COIL)	
L861	1-410-192-51	INDUCTOR CHIP 1uH	
L862	1-410-192-51	INDUCTOR CHIP 1uH	
L863	1-410-192-51	INDUCTOR CHIP 1uH	
L864	1-410-192-51	INDUCTOR CHIP 1uH	
L865	1-410-192-51	INDUCTOR CHIP 1uH	
		(RESISTOR)	
R861	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R862	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
		(VARIABLE RESISTOR)	
RV861	1-238-266-11	RES, VAR, CARBON 10K (PHONE LEVEL)	
		(SWITCH)	
S863	1-554-088-00	SWITCH, KEY BOARD (REC START/STOP)	

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A-7071-568-A IR-22P BOARD, COMPLETE
****
(Ref.No 4000 Series)

Ref. No.	Part No.	Description	Remark
		(CAPACITOR)	
C701	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
		(CONNECTOR)	
CN704	1-506-469-11	CONNECTOR 4P, MALE	
CN705	1-506-469-11	CONNECTOR 4P, MALE	
		(DIODE)	
D707	8-719-104-34	DIODE 1S2836	
		(IC)	
IC701	8-741-100-64	IC SBX1621-51	
IC702	8-741-100-64	IC SBX1621-51	
		(RESISTOR)	
R701	1-216-017-00	METAL CHIP 47 5% 1/10W	
R702	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R703	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		(SWITCH)	
S781	1-572-497-11	SWITCH, SLIDE (COMMANDER ON/OFF)	

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Ref. No.	Part No.	Description	Remark
*	1-633-600-21	LI-12P BOARD (Ref.No 5000 Series) ************	
	1-550-104-32	HOLDER, BATTERY	
		(CONNECTOR)	
* CN801	1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P	
		(SWITCH)	
S801	1-570-871-11	SWITCH, SLIDE	

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A-7071-571-A LI-5P BOARD, COMPLETE
****
A-7071-570-A LR-14P BOARD, COMPLETE
****
A-7071-372-A MJ-45P BOARD, COMPLETE
****
(Ref.No 6000 Series)

Ref. No.	Part No.	Description	Remark
		(CAPACITOR)	
C731	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C732	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C733	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C734	1-124-589-11	ELECT	47uF	20%	16V
		(CONNECTOR)			
* CN731	1-566-185-11	PIN, CONNECTOR (PC BOARD) 6P			
CN732	1-506-469-11	CONNECTOR	4P, MALE		
		(DIODE)			
D737	8-719-106-43	DIODE RD9.1M-B1			
D738	8-719-106-43	DIODE RD9.1M-B1			
		(JACK)			
J733	1-507-797-21	JACK, LARGE TYPE (MIC L/R)			
		(COIL)			
L731	1-410-192-51	INDUCTOR CHIP	1uH		
L732	1-410-192-51	INDUCTOR CHIP	1uH		
L733	1-410-192-51	INDUCTOR CHIP	1uH		
		(RESISTOR)			
R731	1-216-019-00	METAL CHIP	56	5%	1/10W
R732	1-216-073-00	METAL CHIP	10K	5%	1/10W
R733	1-216-073-00	METAL CHIP	10K	5%	1/10W

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* A-7062-181-A MR-30 BOARD, COMPLETE

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(Ref.No 2000 Series)

A-7068-155-A HR-3P BOARD, COMPLETE (HIC)

Ref. No.	Part No.	Description			Remark
		(CAPACITOR)			
C813	1-162-940-11	CERAMIC CHIP	9PF	0.5PF	50V
C814	1-162-940-11	CERAMIC CHIP	9PF	0.5PF	50V
C816	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C817	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C818	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C819	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C820	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C821	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C822	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C823	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C824	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C825	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C827	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C828	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C829	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C830	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C831	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C832	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C833	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C834	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C835	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C838	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C839	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C840	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C841	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C845	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C846	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C847	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C848	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C849	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C850	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C851	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C853	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C854	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C855	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C856	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C857	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C858	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C859	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C860	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C861	1-162-937-11	CERAMIC CHIP	6PF	0.5PF	50V
C862	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C863	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C864	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C865	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C866	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C870	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C872	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C873	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C876	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C881	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C882	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C883	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C884	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C885	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C886	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C887	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C890	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C891	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C892	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C894	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C896	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C897	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C898	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C899	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C900	1-162-948-11	CERAMIC CHIP	39PF	5%	50V

Ref. No.	Part No.	Description	Remark
C902	1-162-945-11	CERAMIC CHIP 22PF 5%	50V
C905	1-135-157-21	TANTALUM CHIP 10uF 20%	6.3V
C906	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C907	1-162-913-11	CERAMIC CHIP 8PF 0.5PF	50V
C908	1-162-954-11	CERAMIC CHIP 120PF 5%	50V
C909	1-162-958-11	CERAMIC CHIP 270PF 5%	50V
C910	1-162-954-11	CERAMIC CHIP 120PF 5%	50V
C951	1-124-778-00	ELECT CHIP 22uF 20%	6.3V
C952	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C953	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C954	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C955	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C956	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C957	1-162-945-11	CERAMIC CHIP 22PF 5%	50V
C958	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C959	1-135-180-21	TANTALUM CHIP 3.3uF 20%	6.3V
C960	1-162-946-11	CERAMIC CHIP 27PF 5%	50V
C961	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C962	1-135-180-21	TANTALUM CHIP 3.3uF 20%	6.3V

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN801	1-566-516-11	CONNECTOR, FPC (ZIF) 16P	
CN802	1-506-485-11	CONNECTOR 6P, MALE	
* CN803	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P	
* CN804	1-566-766-11	PIN, CONNECTOR (PC BOARD) 11P	
* CN805	1-565-547-11	PIN, CONNECTOR (PC BOARD) 8P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D801	8-719-941-86	DIODE DAN202U	
D802	8-719-941-86	DIODE DAN202U	
D804	8-719-800-76	DIODE 1SS226	
D805	8-719-941-86	DIODE DAN202U	
D806	8-719-941-86	DIODE DAN202U	
D808	8-719-941-86	DIODE DAN202U	
D810	8-719-941-86	DIODE DAN202U	
D811	8-719-800-76	DIODE 1SS226	
D812	8-719-941-86	DIODE DAN202U	
D813	8-719-941-86	DIODE DAN202U	
D814	8-719-941-86	DIODE DAN202U	
D951	8-719-800-76	DIODE 1SS226	

(IC)

Ref. No.	Part No.	Description	Remark
IC801	8-759-233-94	IC TA8607F	
IC802	8-759-925-60	IC BA401	

(COIL)

Ref. No.	Part No.	Description	Remark
L804	1-410-384-31	INDUCTOR CHIP 18uH	
L805	1-410-384-31	INDUCTOR CHIP 18uH	
L806	1-410-381-11	INDUCTOR CHIP 10uH	
L807	1-410-381-11	INDUCTOR CHIP 10uH	
L808	1-412-067-21	INDUCTOR CHIP 330uH	
L809	1-410-167-41	INDUCTOR CHIP 820uH	
L810	1-410-657-21	INDUCTOR CHIP 180uH	
L811	1-410-379-21	INDUCTOR CHIP 6.8uH	
L812	1-410-374-11	INDUCTOR CHIP 2.7uH	
L813	1-410-380-31	INDUCTOR CHIP 8.2uH	
L814	1-410-379-21	INDUCTOR CHIP 6.8uH	
L815	1-410-384-31	INDUCTOR CHIP 18uH	
L816	1-408-797-11	INDUCTOR CHIP 470uH	
L817	1-408-797-11	INDUCTOR CHIP 470uH	
L818	1-410-384-31	INDUCTOR CHIP 18uH	
L819	1-408-793-21	INDUCTOR CHIP 220uH	
L821	1-410-384-31	INDUCTOR CHIP 18uH	
L822	1-410-383-31	INDUCTOR CHIP 15uH	
L823	1-410-387-11	INDUCTOR CHIP 33uH	
L825	1-410-381-11	INDUCTOR CHIP 10uH	
L901	1-410-387-11	INDUCTOR CHIP 33uH	
L951	1-410-381-11	INDUCTOR CHIP 10uH	
L952	1-410-387-11	INDUCTOR CHIP 33uH	
L953	1-410-381-11	INDUCTOR CHIP 10uH	
L954	1-410-381-11	INDUCTOR CHIP 10uH	

(TRANSISTOR)

Ref. No.	Part No.	Description	Remark
Q808	8-729-216-22	TRANSISTOR 2SA1162-G	
Q809	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q810	8-729-216-22	TRANSISTOR 2SA1162-G	
Q811	8-729-905-35	TRANSISTOR 2SC4081-R	
Q812	8-729-905-35	TRANSISTOR 2SC4081-R	
Q813	8-729-403-07	TRANSISTOR XN1213	
Q814	8-729-905-45	TRANSISTOR DTA143EU	
Q815	8-729-905-09	TRANSISTOR DTA144WU	
Q817	8-729-905-35	TRANSISTOR 2SC4081-R	
Q819	8-729-905-35	TRANSISTOR 2SC4081-R	
Q820	8-729-402-13	TRANSISTOR XN1501	
Q821	8-729-905-35	TRANSISTOR 2SC4081-R	
Q822	8-729-905-35	TRANSISTOR 2SC4081-R	
Q823	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q824	8-729-402-42	TRANSISTOR UN5213	
Q825	8-729-403-07	TRANSISTOR XN1213	
Q826	8-729-403-35	TRANSISTOR UN5113	
Q827	8-729-402-42	TRANSISTOR UN5213	
Q828	8-729-907-00	TRANSISTOR DTC114EU	
Q831	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q832	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q833	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q836	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q837	8-729-905-35	TRANSISTOR 2SC4081-R	
Q838	8-729-905-35	TRANSISTOR 2SC4081-R	
Q839	8-729-905-35	TRANSISTOR 2SC4081-R	
Q840	8-729-905-XX	TRANSISTOR DTC114TUT106	
Q841	8-729-905-35	TRANSISTOR 2SC4081-R	
Q842	8-729-905-35	TRANSISTOR 2SC4081-R	

Ref. No.	Part No.	Description	Remark
Q843	8-729-905-35	TRANSISTOR 2SC4081-R	
Q844	8-729-905-23	TRANSISTOR 2SA1576-R	
Q847	8-729-905-35	TRANSISTOR 2SC4081-R	
Q848	8-729-402-42	TRANSISTOR UN5213	
Q849	8-729-402-42	TRANSISTOR UN5213	
Q850	8-729-905-35	TRANSISTOR 2SC4081-R	
Q851	8-729-402-42	TRANSISTOR UN5213	
Q852	8-729-216-22	TRANSISTOR 2SA1162-G	
Q901	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q902	8-729-402-42	TRANSISTOR UN5213	
Q951	8-729-402-81	TRANSISTOR XN4501	
Q952	8-729-905-35	TRANSISTOR 2SC4081-R	
Q953	8-729-905-23	TRANSISTOR 2SA1576-R	
Q954	8-729-905-35	TRANSISTOR 2SC4081-R	
Q955	8-729-403-42	TRANSISTOR XN1401	
Q956	8-729-905-35	TRANSISTOR 2SC4081-R	
Q957	8-729-905-23	TRANSISTOR 2SA1576-R	
Q958	8-729-905-35	TRANSISTOR 2SC4081-R	
Q959	8-729-402-42	TRANSISTOR UN5213	
		〈 RESISTOR 〉	
R817	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R818	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R819	1-216-805-11	METAL CHIP 47 5% 1/16W	
R820	1-216-805-11	METAL CHIP 47 5% 1/16W	
R821	1-216-818-11	METAL CHIP 560 5% 1/16W	
R822	1-216-814-11	METAL CHIP 270 5% 1/16W	
R823	1-216-813-11	METAL CHIP 220 5% 1/16W	
R824	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R825	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R826	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R827	1-216-811-11	METAL CHIP 150 5% 1/16W	
R828	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R829	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R830	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R831	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R832	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R834	1-216-818-11	METAL CHIP 560 5% 1/16W	
R835	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R836	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R837	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R838	1-216-817-11	METAL CHIP 470 5% 1/16W	
R839	1-216-817-11	METAL CHIP 470 5% 1/16W	
R840	1-216-815-11	METAL CHIP 330 5% 1/16W	
R841	1-216-814-11	METAL CHIP 270 5% 1/16W	
R842	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R843	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R844	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R846	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R847	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R848	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R849	1-216-817-11	METAL CHIP 470 5% 1/16W	
R850	1-216-810-11	METAL CHIP 120 5% 1/16W	
R852	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R855	1-216-815-11	METAL CHIP 330 5% 1/16W	
R856	1-216-820-11	METAL CHIP 820 5% 1/16W	
R857	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R858	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R859	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R861	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R862	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R865	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R866	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R867	1-216-818-11	METAL CHIP 560 5% 1/16W	
R868	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R869	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R870	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R874	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R875	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R876	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R877	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R878	1-216-812-11	METAL CHIP 180 5% 1/16W	
R879	1-216-812-11	METAL CHIP 180 5% 1/16W	
R885	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R886	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R887	1-216-818-11	METAL CHIP 560 5% 1/16W	
R888	1-216-816-11	METAL CHIP 390 5% 1/16W	
R889	1-216-817-11	METAL CHIP 470 5% 1/16W	
R890	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R891	1-216-818-11	METAL CHIP 560 5% 1/16W	
R896	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R899	1-216-820-11	METAL CHIP 820 5% 1/16W	
R901	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R902	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R907	1-216-817-11	METAL CHIP 470 5% 1/16W	
R908	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R909	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R910	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R911	1-216-809-11	METAL CHIP 100 5% 1/16W	
R913	1-216-809-11	METAL CHIP 100 5% 1/16W	
R914	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R915	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R916	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R917	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R920	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R921	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R922	1-216-817-11	METAL CHIP 470 5% 1/16W	
R923	1-216-817-11	METAL CHIP 470 5% 1/16W	
R924	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R925	1-216-817-11	METAL CHIP 470 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R926	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R927	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R928	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R929	1-216-817-11	METAL CHIP	470	5%	1/16W	
R930	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R931	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R932	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R934	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R935	1-216-817-11	METAL CHIP	470	5%	1/16W	
R936	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R937	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R938	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R939	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R941	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R944	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R945	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R946	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R947	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R951	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R952	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R953	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R954	1-216-811-11	METAL CHIP	150	5%	1/16W	
R955	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R956	1-216-820-11	METAL CHIP	820	5%	1/16W	
R957	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R958	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R959	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R960	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R961	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R962	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R963	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R964	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R965	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R966	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R967	1-216-818-11	METAL CHIP	560	5%	1/16W	
R968	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R969	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R970	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R971	1-216-841-11	METAL CHIP	47K	5%	1/16W	
		< VARIABLE RESISTOR >				
RV802	1-230-869-11	RES, ADJ, METAL	4.7K			
RV803	1-230-869-11	RES, ADJ, METAL	4.7K			
RV805	1-230-868-11	RES, ADJ, METAL	2.2K			
RV806	1-230-867-11	RES, ADJ, METAL	1K			

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Ref. No.	Part No.	Description				Remark
	A-7063-078-A	PC-52P BOARD, COMPLETE				
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		(Ref.No 6000 Series)				
*	3-742-708-01	COVER, LPF SHIELD				
*	3-742-760-01	PLATE (A), SHIELD, LPF				
*	3-742-818-01	PLATE, SHIELD, PC				
		< CAPACITOR >				
C301	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C302	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C303	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C304	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C305	1-126-153-11	ELECT	22uF	20%	6.3V	
C311	1-126-160-11	ELECT	1uF	20%	50V	
C312	1-126-160-11	ELECT	1uF	20%	50V	
C313	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C314	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C315	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C316	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C317	1-126-163-11	ELECT	4.7uF	20%	50V	
C318	1-126-163-11	ELECT	4.7uF	20%	50V	
C319	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C321	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C322	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C323	1-126-151-11	ELECT, NONPOLAR	4.7uF	20%	16V	
C325	1-126-151-11	ELECT, NONPOLAR	4.7uF	20%	16V	
C327	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C328	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C329	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C330	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C331	1-124-566-11	ELECT	120uF	20%	6.3V	
C332	1-124-566-11	ELECT	120uF	20%	6.3V	
C333	1-124-584-00	ELECT	100uF	20%	10V	
C335	1-126-153-11	ELECT	22uF	20%	6.3V	
C336	1-124-584-00	ELECT	100uF	20%	10V	
C337	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C338	1-124-967-11	ELECT	10uF	20%	10V	
C339	1-124-967-11	ELECT	10uF	20%	10V	
C340	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C341	1-124-967-11	ELECT	10uF	20%	10V	
C342	1-124-967-11	ELECT	10uF	20%	10V	
C343	1-126-157-11	ELECT	10uF	20%	16V	
C346	1-126-157-11	ELECT	10uF	20%	16V	
C352	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C354	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C355	1-124-584-00	ELECT	100uF	20%	10V	
C356	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C357	1-126-153-11	ELECT	22uF	20%	6.3V	
C358	1-126-153-11	ELECT	22uF	20%	6.3V	
C359	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	

PC-52P

Ref. No.	Part No.	Description			Remark
C360	1-124-257-00	ELECT	2.2uF	20%	50V
C361	1-124-257-00	ELECT	2.2uF	20%	50V
C362	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C363	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C364	1-126-153-11	ELECT	22uF	20%	6.3V
C365	1-126-478-11	ELECT	33uF	20%	10V
C366	1-126-478-11	ELECT	33uF	20%	10V
C367	1-126-153-11	ELECT	22uF	20%	6.3V
C368	1-126-157-11	ELECT	10uF	20%	16V
C369	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C370	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C371	1-126-163-11	ELECT	4.7uF	20%	50V
C372	1-126-163-11	ELECT	4.7uF	20%	50V
C373	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C374	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C375	1-124-967-11	ELECT	10uF	20%	10V
C376	1-124-967-11	ELECT	10uF	20%	10V
C377	1-126-163-11	ELECT	4.7uF	20%	50V
C378	1-126-162-11	ELECT	3.3uF	20%	50V
C379	1-124-229-00	ELECT	33uF	20%	10V
C380	1-124-229-00	ELECT	33uF	20%	10V
C381	1-126-157-11	ELECT	10uF	20%	16V
C382	1-126-157-11	ELECT	10uF	20%	16V
C383	1-126-163-11	ELECT	4.7uF	20%	50V
C384	1-126-163-11	ELECT	4.7uF	20%	50V
C385	1-126-153-11	ELECT	22uF	20%	6.3V
C386	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C387	1-124-584-00	ELECT	100uF	20%	10V
C388	1-124-229-00	ELECT	33uF	20%	10V
C389	1-124-584-00	ELECT	100uF	20%	10V
C390	1-126-153-11	ELECT	22uF	20%	6.3V
C391	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C392	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C393	1-126-153-11	ELECT	22uF	20%	6.3V
C394	1-126-157-11	ELECT	10uF	20%	16V
C395	1-126-157-11	ELECT	10uF	20%	16V
C396	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C397	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C398	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C399	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C400	1-126-157-11	ELECT	10uF	20%	16V
C401	1-126-157-11	ELECT	10uF	20%	16V
C402	1-126-163-11	ELECT	4.7uF	20%	50V
C403	1-124-254-00	ELECT	0.68uF	20%	50V
C404	1-126-163-11	ELECT	4.7uF	20%	50V
C405	1-124-254-00	ELECT	0.68uF	20%	50V
C406	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C407	1-164-330-21	CERAMIC CHIP	0.22uF	10%	16V
C408	1-164-330-21	CERAMIC CHIP	0.22uF	10%	16V
C409	1-163-025-11	CERAMIC CHIP	0.001uF		50V

Ref. No.	Part No.	Description			Remark
C410	1-124-257-00	ELECT	2.2uF	20%	50V
C411	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C412	1-124-584-00	ELECT	100uF	20%	10V
C413	1-126-153-11	ELECT	22uF	20%	6.3V
C416	1-126-157-11	ELECT	10uF	20%	16V
C417	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C421	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C422	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C424	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C425	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C426	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C427	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C428	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C430	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C431	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C432	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C433	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C434	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C435	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C436	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C437	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C438	1-126-157-11	ELECT	10uF	20%	16V
C440	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C441	1-126-157-11	ELECT	10uF	20%	16V
C442	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C443	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C444	1-126-157-11	ELECT	10uF	20%	16V
C445	1-126-157-11	ELECT	10uF	20%	16V
C446	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C447	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C448	1-124-604-00	ELECT	330uF	20%	10V
C449	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C450	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C451	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C543	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C545	1-124-584-00	ELECT	100uF	20%	10V
C546	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C547	1-124-464-11	ELECT	0.22uF	20%	50V
C549	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C550	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C600	1-126-157-11	ELECT	10uF	20%	16V
C601	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C602	1-126-153-11	ELECT	22uF	20%	6.3V
C604	1-126-160-11	ELECT	1uF	20%	50V
C606	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C607	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C609	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C612	1-126-154-11	ELECT	47uF	20%	6.3V
C613	1-126-157-11	ELECT	10uF	20%	16V
C614	1-126-157-11	ELECT	10uF	20%	16V

Ref. No.	Part No.	Description			Remark
C615	1-126-160-11	ELECT	1uF	20%	50V
C617	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C618	1-126-154-11	ELECT	47uF	20%	6.3V
C619	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C620	1-126-157-11	ELECT	10uF	20%	16V
C621	1-126-154-11	ELECT	47uF	20%	6.3V
C622	1-126-154-11	ELECT	47uF	20%	6.3V
C623	1-126-157-11	ELECT	10uF	20%	16V
C624	1-126-154-11	ELECT	47uF	20%	6.3V
C625	1-124-584-00	ELECT	100uF	20%	10V
C626	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C631	1-126-157-11	ELECT	10uF	20%	16V
C633	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C636	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C637	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C638	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C639	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C640	1-126-157-11	ELECT	10uF	20%	16V
C641	1-126-157-11	ELECT	10uF	20%	16V
C642	1-124-967-11	ELECT	10uF	20%	10V
C643	1-124-967-11	ELECT	10uF	20%	10V
C645	1-126-157-11	ELECT	10uF	20%	16V
C646	1-126-157-11	ELECT	10uF	20%	16V
C648	1-124-464-11	ELECT	0.22uF	20%	50V
C649	1-163-124-00	CERAMIC CHIP	200PF	5%	50V
C650	1-124-257-00	ELECT	2.2uF	20%	50V
C655	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C656	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C668	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C670	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C672	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C674	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C675	1-126-154-11	ELECT	47uF	20%	6.3V
C676	1-124-584-00	ELECT	100uF	20%	10V
C677	1-124-604-00	ELECT	330uF	20%	10V
C678	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C679	1-124-566-11	ELECT	120uF	20%	6.3V
C680	1-126-154-11	ELECT	47uF	20%	6.3V
C681	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C682	1-126-157-11	ELECT	10uF	20%	16V
C683	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C684	1-163-124-00	CERAMIC CHIP	200PF	5%	50V
C685	1-124-257-00	ELECT	2.2uF	20%	50V
C686	1-124-584-00	ELECT	100uF	20%	10V
C690	1-124-464-11	ELECT	0.22uF	20%	50V
C691	1-126-157-11	ELECT	10uF	20%	16V
C692	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C694	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C695	1-126-153-11	ELECT	22uF	20%	6.3V
C698	1-126-157-11	ELECT	10uF	20%	16V

Ref. No.	Part No.	Description		Remark
C699	1-164-232-11	CERAMIC CHIP	0.01uF	50V
		(CONNECTOR)		
* CN301	1-566-185-21	PIN, CONNECTOR (PC BOARD) 6P		
* CN302	1-566-185-11	PIN, CONNECTOR (PC BOARD) 6P		
* CN303	1-566-201-11	PIN, CONNECTOR (PC BOARD) 8P		
* CN305	1-565-883-11	PIN, CONNECTOR (PC BOARD) 11P		
* CN306	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P		
* CN307	1-565-211-11	CONNECTOR, FPC (ZIF) 22P		
* CN308	1-566-184-11	PIN, CONNECTOR (PC BOARD) 5P		
* CN309	1-566-197-11	PIN, CONNECTOR (PC BOARD) 4P		
* CN310	1-566-198-11	PIN, CONNECTOR (PC BOARD) 5P		
* CN311	1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P		
* CN312	1-566-185-11	PIN, CONNECTOR (PC BOARD) 6P		
CN313	1-565-880-11	PIN, CONNECTOR (PC BOARD) 8P		
* CN316	1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P		
* CN317	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P		
		(TRIMMER)		
CV422	1-141-311-11	CAP, TRIMMER	20PF	
		(DIODE)		
D301	8-719-108-24	DIODE	1SS223	
D315	8-719-108-24	DIODE	1SS223	
D316	8-719-400-18	DIODE	MA152WK	
D317	8-719-400-18	DIODE	MA152WK	
D318	8-719-400-18	DIODE	MA152WK	
D319	8-719-400-18	DIODE	MA152WK	
D320	8-713-300-88	DIODE	1T33C-01	
D322	8-719-108-24	DIODE	1SS223	
D333	8-719-108-24	DIODE	1SS223	
D334	8-719-108-24	DIODE	1SS223	
D335	8-719-104-34	DIODE	1S2836	
D336	8-719-108-24	DIODE	1SS223	
D337	8-719-104-34	DIODE	1S2836	
D338	8-719-104-34	DIODE	1S2836	
D339	8-719-400-18	DIODE	MA152WK	
D341	8-719-108-24	DIODE	1SS223	
D342	8-719-400-18	DIODE	MA152WK	
D353	8-719-108-24	DIODE	1SS223	
D600	8-719-940-45	DIODE	DWA010	
D602	8-719-108-24	DIODE	1SS223	
D604	8-719-108-24	DIODE	1SS223	
D605	8-719-104-34	DIODE	1S2836	
D606	8-719-104-34	DIODE	1S2836	
D607	8-719-400-18	DIODE	MA152WK	
D608	8-719-108-24	DIODE	1SS223	
D624	8-719-400-18	DIODE	MA152WK	

PC-52P

Ref. No.	Part No.	Description	Remark
		(FILTER)	
FL303	1-236-043-11	FILTER, LOW PASS	
FL304	1-236-043-11	FILTER, LOW PASS	
		(IC)	
IC301	8-759-111-56	IC uPC4572G2	
IC302	8-759-512-62	IC CXA1497N	
IC303	8-759-603-27	IC M5201FP	
IC304	8-759-603-27	IC M5201FP	
IC307	8-759-822-92	IC LA7451M	
IC308	8-759-509-33	IC XRU4030BF	
IC309	8-759-111-56	IC uPC4572G2	
IC314	8-752-351-52	IC CXD1077M-T6	
IC315	8-759-929-26	IC TL431CPS	
IC316	8-759-111-56	IC uPC4572G2	
IC317	8-752-017-60	IC CX20176	
IC318	8-759-981-82	IC RC3414M	
IC319	8-757-991-00	IC CX7991	
IC320	8-759-507-53	IC MS6264CLL-15FC	
IC321	8-752-332-46	IC CXD1208Q	
IC322	8-759-502-14	IC CF79050PV	
IC323	8-759-111-56	IC uPC4572G2	
IC324	8-752-010-20	IC CX20102	
IC325	8-759-961-38	IC BA6138	
IC327	8-759-981-69	IC LM2904M	
IC328	8-759-009-51	IC MC14538BF	
IC329	8-759-300-71	IC HD14053BFP	
IC330	8-759-981-69	IC LM2904M	
IC331	8-759-981-69	IC LM2904M	
IC332	8-759-603-27	IC M5201FP	
IC333	8-759-603-27	IC M5201FP	
		(COIL)	
L301	1-408-978-21	INDUCTOR 47uH	
L302	1-408-978-21	INDUCTOR 47uH	
L303	1-408-978-21	INDUCTOR 47uH	
L305	1-410-144-11	INDUCTOR 15uH	
L306	1-408-978-21	INDUCTOR 47uH	
L307	1-410-389-31	INDUCTOR CHIP 47uH	
L308	1-410-658-31	INDUCTOR CHIP 220uH	
L309	1-408-978-21	INDUCTOR 47uH	
L310	1-408-978-21	INDUCTOR 47uH	
L311	1-408-970-21	INDUCTOR 10uH	
L315	1-408-970-21	INDUCTOR 10uH	
L600	1-410-144-11	INDUCTOR 15uH	
L601	1-408-982-11	INDUCTOR 100uH	
L602	1-408-970-21	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark
		(TRANSISTOR)	
Q310	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q311	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q312	8-729-901-01	TRANSISTOR DTC144EK	
Q313	8-729-901-06	TRANSISTOR DTA144EK	
Q314	8-729-216-22	TRANSISTOR 2SA1162-G	
Q316	8-729-901-06	TRANSISTOR DTA144EK	
Q319	8-729-901-06	TRANSISTOR DTA144EK	
Q323	8-729-901-06	TRANSISTOR DTA144EK	
Q324	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q325	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q326	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q327	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q330	8-729-901-01	TRANSISTOR DTC144EK	
Q331	8-729-901-06	TRANSISTOR DTA144EK	
Q332	8-729-900-53	TRANSISTOR DTC114EK	
Q333	8-729-901-01	TRANSISTOR DTC144EK	
Q334	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q335	8-729-216-22	TRANSISTOR 2SA1162-G	
Q336	8-729-901-01	TRANSISTOR DTC144EK	
Q337	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q338	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q339	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q340	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q341	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q342	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q345	8-729-902-90	TRANSISTOR FMA4	
Q347	8-729-901-06	TRANSISTOR DTA144EK	
Q348	8-729-901-01	TRANSISTOR DTC144EK	
Q349	8-729-904-20	TRANSISTOR FMA2	
Q350	8-729-901-06	TRANSISTOR DTA144EK	
Q351	8-729-901-01	TRANSISTOR DTC144EK	
Q352	8-729-901-01	TRANSISTOR DTC144EK	
Q600	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q601	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q602	8-729-805-25	TRANSISTOR 2SB1121-S	
Q603	8-729-903-10	TRANSISTOR FMW1	
Q604	8-729-904-07	TRANSISTOR FMG2	
Q605	8-729-902-XX	TRANSISTOR DTC114TK-T146	
Q606	8-729-902-90	TRANSISTOR FMA4	
Q607	8-729-901-01	TRANSISTOR DTC144EK	
Q612	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q618	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q619	8-729-901-01	TRANSISTOR DTC144EK	
Q620	8-729-901-01	TRANSISTOR DTC144EK	
Q623	8-729-901-01	TRANSISTOR DTC144EK	
Q624	8-729-900-51	TRANSISTOR DTA114TK	
Q750	8-729-901-01	TRANSISTOR DTC144EK	
Q751	8-729-904-07	TRANSISTOR FMG2	
Q752	8-729-904-07	TRANSISTOR FMG2	

Ref. No.	Part No.	Description				Remark
Q753	8-729-904-07	TRANSISTOR	FMG2			
Q754	8-729-901-01	TRANSISTOR	DTC144EK			
		(RESISTOR)				
R313	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R314	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R315	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R316	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R318	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R319	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R320	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R323	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R324	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R325	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R326	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R327	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R328	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R329	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R330	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R333	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R334	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R336	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R337	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R338	1-216-025-00	METAL CHIP	100	5%	1/10W	
R339	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R340	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R342	1-216-027-00	METAL CHIP	120	5%	1/10W	
R343	1-216-295-00	METAL CHIP	0	5%	1/10W	
R344	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R348	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R349	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R350	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R352	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R359	1-216-683-11	METAL CHIP	22K	0.5%	1/10W	
R360	1-216-691-11	METAL CHIP	47K	0.5%	1/10W	
R361	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R362	1-216-090-00	METAL CHIP	51K	5%	1/10W	
R364	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R365	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R366	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R367	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R368	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R369	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R370	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R371	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R372	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R373	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R375	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R376	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R377	1-216-037-00	METAL CHIP	330	5%	1/10W	
R378	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R386	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R388	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R389	1-216-009-00	METAL CHIP	22	5%	1/10W	
R393	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R394	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R395	1-216-127-11	METAL CHIP	1.8M	5%	1/10W	
R397	1-216-129-00	METAL CHIP	2.2M	5%	1/10W	
R398	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R399	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R400	1-216-748-11	METAL CHIP	39K	1%	1/10W	
R401	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R402	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R403	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R404	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R405	1-216-748-11	METAL CHIP	39K	1%	1/10W	
R406	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R407	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R408	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R409	1-216-700-11	METAL CHIP	470K	1%	1/10W	
R410	1-216-039-00	METAL CHIP	390	5%	1/10W	
R411	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R412	1-216-653-11	METAL CHIP	1.2K	0.5%	1/10W	
R413	1-216-022-00	METAL CHIP	75	5%	1/10W	
R414	1-216-661-11	METAL CHIP	2.7K	0.5%	1/10W	
R415	1-216-295-00	METAL CHIP	0	5%	1/10W	
R418	1-216-295-00	METAL CHIP	0	5%	1/10W	
R419	1-216-029-00	METAL CHIP	150	5%	1/10W	
R420	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R421	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R422	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R423	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R424	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R425	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R426	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R427	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R428	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R429	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R430	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R431	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R432	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R433	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R434	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R435	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R436	1-216-019-00	METAL CHIP	56	5%	1/10W	
R437	1-216-019-00	METAL CHIP	56	5%	1/10W	
R438	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R439	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R440	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	

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Ref. No.	Part No.	Description				Remark
R441	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R442	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R443	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R444	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R445	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R446	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R447	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R448	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R449	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R450	1-216-035-00	METAL CHIP	270	5%	1/10W	
R451	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R452	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R453	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R454	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R455	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R456	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R457	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R458	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R459	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R460	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R461	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R462	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R463	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R464	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R465	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R466	1-216-025-00	METAL CHIP	100	5%	1/10W	
R467	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R468	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R469	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R470	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R471	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R472	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R473	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R474	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R475	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R476	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R477	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R478	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R479	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R482	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R483	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R485	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R486	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R489	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R490	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R493	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R494	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R498	1-216-295-00	METAL CHIP	0	5%	1/10W	
R504	1-216-045-00	METAL CHIP	680	5%	1/10W	
R505	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R506	1-216-047-00	METAL CHIP	820	5%	1/10W	
R507	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R509	1-216-025-00	METAL CHIP	100	5%	1/10W	
R510	1-216-045-00	METAL CHIP	680	5%	1/10W	
R511	1-216-045-00	METAL CHIP	680	5%	1/10W	
R512	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R513	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R514	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R515	1-216-045-00	METAL CHIP	680	5%	1/10W	
R516	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R517	1-216-045-00	METAL CHIP	680	5%	1/10W	
R518	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R519	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R520	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R522	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R523	1-216-045-00	METAL CHIP	680	5%	1/10W	
R524	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R525	1-216-045-00	METAL CHIP	680	5%	1/10W	
R526	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R528	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R534	1-216-645-11	METAL CHIP	560	0.5%	1/10W	
R536	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R537	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R538	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R539	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R540	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R541	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R546	1-216-045-00	METAL CHIP	680	5%	1/10W	
R547	1-216-045-00	METAL CHIP	680	5%	1/10W	
R550	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R551	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R552	1-216-125-00	METAL CHIP	1.5M	5%	1/10W	
R553	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R555	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R562	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R566	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R567	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R569	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R570	1-216-029-00	METAL CHIP	150	5%	1/10W	
R572	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R573	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R574	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R575	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R576	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R577	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R578	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R579	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R580	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R581	1-216-295-00	METAL CHIP	0	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R583	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R584	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R585	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R586	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R587	1-216-295-00	METAL CHIP	0	5%	1/10W	
R590	1-216-295-00	METAL CHIP	0	5%	1/10W	
R592	1-216-295-00	METAL CHIP	0	5%	1/10W	
R593	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R594	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R595	1-216-295-00	METAL CHIP	0	5%	1/10W	
R598	1-216-295-00	METAL CHIP	0	5%	1/10W	
R600	1-216-037-00	METAL CHIP	330	5%	1/10W	
R601	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R602	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R604	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R605	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R609	1-216-295-00	METAL CHIP	0	5%	1/10W	
R612	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R613	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R615	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R616	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R617	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R618	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R619	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R620	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R622	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R624	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R625	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R629	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R633	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R638	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R639	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R640	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R641	1-216-047-00	METAL CHIP	820	5%	1/10W	
R642	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R643	1-216-045-00	METAL CHIP	680	5%	1/10W	
R644	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R645	1-216-045-00	METAL CHIP	680	5%	1/10W	
R646	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R647	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R649	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R650	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R652	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R654	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R655	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R657	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R660	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R661	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R662	1-216-073-00	METAL CHIP	10K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R663	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R666	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R668	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R669	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R672	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R675	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R677	1-216-295-00	METAL CHIP	0	5%	1/10W	
R679	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R684	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R691	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R692	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R693	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R698	1-218-158-11	METAL GLAZE	27K	1%	1/10W	
R699	1-216-747-11	METAL CHIP	33K	1%	1/10W	
R700	1-216-295-00	METAL CHIP	0	5%	1/10W	
R701	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R708	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R710	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R711	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R713	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R714	1-216-045-00	METAL CHIP	680	5%	1/10W	
R715	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R717	1-216-025-00	METAL CHIP	100	5%	1/10W	
R754	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R757	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R758	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R759	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R760	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R762	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R763	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R765	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R766	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R768	1-216-295-00	METAL CHIP	0	5%	1/10W	

(VARIABLE RESISTOR)

RV301	1-230-868-11	RES, ADJ, METAL	2.2K	
RV302	1-230-868-11	RES, ADJ, METAL	2.2K	
RV303	1-230-876-11	RES, ADJ, METAL	470K	
RV304	1-238-223-11	RES, ADJ, METAL	10K	
RV305	1-238-223-11	RES, ADJ, METAL	10K	
RV306	1-230-868-11	RES, ADJ, METAL	2.2K	
RV307	1-238-219-11	RES, ADJ, METAL	470	
RV309	1-230-871-11	RES, ADJ, METAL	22K	
RV310	1-230-871-11	RES, ADJ, METAL	22K	
RV311	1-230-870-11	RES, ADJ, METAL	10K	

(CONNECTOR)

W304	1-949-827-11	HARNESS (PD-101)	

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PJ-22P

Ref. No.	Part No.	Description			Remark
*	A-7062-182-A	PJ-22P BOARD, COMPLETE ********************** (Ref.No 3000 Series)			
		(CAPACITOR)			
C901	1-162-638-11	CERAMIC CHIP	1uF		16V
C903	1-126-163-11	ELECT	4.7uF	20%	50V
C904	1-126-163-11	ELECT	4.7uF	20%	50V
C905	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C906	1-162-638-11	CERAMIC CHIP	1uF		16V
C907	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C908	1-126-153-11	ELECT	22uF	20%	6.3V
C909	1-126-163-11	ELECT	4.7uF	20%	50V
C910	1-126-163-11	ELECT	4.7uF	20%	50V
C912	1-124-229-00	ELECT	33uF	20%	10V
C913	1-124-229-00	ELECT	33uF	20%	10V
C914	1-124-576-11	ELECT	220uF	20%	4V
C915	1-126-157-11	ELECT	10uF	20%	16V
C916	1-124-576-11	ELECT	220uF	20%	4V
C917	1-126-157-11	ELECT	10uF	20%	16V
C918	1-126-163-11	ELECT	4.7uF	20%	50V
C919	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C920	1-126-153-11	ELECT	22uF	20%	6.3V
C921	1-126-153-11	ELECT	22uF	20%	6.3V
C923	1-126-163-11	ELECT	4.7uF	20%	50V
C924	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C925	1-163-034-00	CERAMIC CHIP	0.033uF		50V
C926	1-126-153-11	ELECT	22uF	20%	6.3V
C927	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C928	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C929	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C930	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C931	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C932	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C933	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C934	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C935	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C936	1-124-229-00	ELECT	33uF	20%	10V
		(CONNECTOR)			
* CN901	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P			
* CN902	1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P			
CN903	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P			
* CN904	1-563-308-11	CONNECTOR, BOARD TO BOARD 4P			
* CN905	1-566-763-11	PIN, CONNECTOR (PC BOARD) 8P			
		(DIODE)			
D903	8-719-106-43	DIODE	RD9.1M-B1		
D904	8-719-106-43	DIODE	RD9.1M-B1		
D905	8-719-106-43	DIODE	RD9.1M-B1		
D906	8-719-106-43	DIODE	RD9.1M-B1		
D907	8-719-106-43	DIODE	RD9.1M-B1		
D908	8-719-106-43	DIODE	RD9.1M-B1		
D909	8-719-106-43	DIODE	RD9.1M-B1		
D910	8-719-106-43	DIODE	RD9.1M-B1		
D911	8-719-106-43	DIODE	RD9.1M-B1		
D912	8-719-106-43	DIODE	RD9.1M-B1		
D919	8-719-400-18	DIODE	MA152WK		
D920	8-719-400-18	DIODE	MA152WK		
D921	8-719-400-18	DIODE	MA152WK		
D922	8-719-400-18	DIODE	MA152WK		
D923	8-719-400-18	DIODE	MA152WK		
D924	8-719-400-18	DIODE	MA152WK		
		(IC)			
IC901	8-752-009-51	IC	CX20095A		
IC902	8-759-710-86	IC	NJM2233BM		
		(JACK)			
J901	1-566-850-31	CONNECTOR, (S) TERMINAL 4P (INPUT S VIDEO)			
J902	1-569-368-11	JACK, PIN 3P (INPUT VIDEO/AUDIO)			
J903	1-566-850-31	CONNECTOR, (S) TERMINAL 4P (OUTPUT S VIDEO)			
J904	1-537-142-21	TERMINAL BOARD (VIDEO/RFU/ DC OUT/AUDIO)			
J905	1-568-956-31	JACK, PIN 2P (OUTPUT AUDIO L/R)			
		(COIL)			
L903	1-408-970-21	INDUCTOR	10uH		
L907	1-408-958-21	INDUCTOR	1uH		
L908	1-408-978-21	INDUCTOR	47uH		
		(TRANSISTOR)			
Q901	8-729-216-22	TRANSISTOR	2SA1162-G		
Q904	8-729-901-01	TRANSISTOR	DTC144EK		
Q905	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q906	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q907	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q908	8-729-230-49	TRANSISTOR	2SC2712-YG		
Q909	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q910	8-729-141-48	TRANSISTOR	2SB624-BV345		
Q911	8-729-901-01	TRANSISTOR	DTC144EK		
Q912	8-729-901-01	TRANSISTOR	DTC144EK		
Q913	8-729-901-01	TRANSISTOR	DTC144EK		
Q914	8-729-101-07	TRANSISTOR	2SB798-DL		
Q917	8-729-901-01	TRANSISTOR	DTC144EK		
Q918	8-729-901-01	TRANSISTOR	DTC144EK		
Q919	8-729-216-22	TRANSISTOR	2SA1162-G		
Q921	8-729-901-01	TRANSISTOR	DTC144EK		
Q922	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q923	8-729-120-28	TRANSISTOR	2SC1623-L5L6		

Ref. No.	Part No.	Description				Remark
Q925	8-729-216-22	TRANSISTOR	2SA1162-G			
Q930	8-729-216-22	TRANSISTOR	2SA1162-G			
Q931	8-729-216-22	TRANSISTOR	2SA1162-G			
Q932	8-729-901-06	TRANSISTOR	DTA144EK			
Q933	8-729-901-01	TRANSISTOR	DTC144EK			

(RESISTOR)

R901	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R902	1-216-041-00	METAL CHIP	470	5%	1/10W	
R903	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R904	1-216-041-00	METAL CHIP	470	5%	1/10W	
R905	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R906	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R907	1-216-295-00	METAL CHIP	0	5%	1/10W	
R908	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R909	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R910	1-216-015-00	METAL CHIP	39	5%	1/10W	
R911	1-216-015-00	METAL CHIP	39	5%	1/10W	
R912	1-216-015-00	METAL CHIP	39	5%	1/10W	
R913	1-216-015-00	METAL CHIP	39	5%	1/10W	
R914	1-216-021-00	METAL CHIP	68	5%	1/10W	
R915	1-216-021-00	METAL CHIP	68	5%	1/10W	
R916	1-216-021-00	METAL CHIP	68	5%	1/10W	
R919	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R921	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R923	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R924	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R925	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R926	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R927	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R928	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R929	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R930	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R931	1-216-039-00	METAL CHIP	390	5%	1/10W	
R932	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R933	1-216-039-00	METAL CHIP	390	5%	1/10W	
R934	1-216-041-00	METAL CHIP	470	5%	1/10W	
R935	1-216-017-00	METAL CHIP	47	5%	1/10W	
R936	1-216-043-00	METAL CHIP	560	5%	1/10W	
R937	1-216-033-00	METAL CHIP	220	5%	1/10W	
R938	1-216-021-00	METAL CHIP	68	5%	1/10W	
R939	1-216-037-00	METAL CHIP	330	5%	1/10W	
R940	1-216-041-00	METAL CHIP	470	5%	1/10W	
R941	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R942	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R943	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R944	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R945	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R946	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R947	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R948	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R949	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R950	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R951	1-216-296-00	METAL CHIP	0	5%	1/8W	
R952	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R953	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R954	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R955	1-216-138-00	METAL CHIP	3.3	5%	1/8W	
R960	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R961	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R963	1-216-295-00	METAL CHIP	0	5%	1/10W	
R964	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R965	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R966	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R968	1-216-025-00	METAL CHIP	100	5%	1/10W	
R972	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	

(VARIABLE RESISTOR)

RV901	1-230-868-11	RES, ADJ, METAL	2.2K
RV902	1-230-868-11	RES, ADJ, METAL	2.2K
RV903	1-230-866-11	RES, ADJ, METAL	470

(SWITCH)

SW901	1-571-102-11	SWITCH, SLIDE (EJECT)
SW902	1-554-945-12	SWITCH, SLIDE (HiFi/MONITOR MIX/PCM)

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A-7063-079-A SS-146P BOARD, COMPLETE
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(Ref.No 4000 Series)

3-947-727-01 HOLDER, FP

(CAPACITOR)

C001	1-124-779-00	ELECT CHIP	10uF	20%	16v
C002	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C004	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C005	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C007	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C008	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C010	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C011	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C012	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C013	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C014	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C015	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C016	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C017	1-164-360-11	CERAMIC CHIP	0.1uF		16V

SS-146P

Ref. No.	Part No.	Description			Remark
C019	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C020	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C070	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C072	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C073	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C075	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C076	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C077	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C101	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C102	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C103	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C104	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C105	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C106	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C107	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C108	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C109	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C110	1-128-007-11	ELECT CHIP	2.2uF	20%	35V
C112	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C113	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C115	1-126-151-11	ELECT, NONPOLAR	4.7uF	20%	16V
C116	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C117	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C118	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C119	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C200	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C202	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C203	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C204	1-124-779-00	ELECT CHIP	10uF	20%	16v
C205	1-124-779-00	ELECT CHIP	10uF	20%	16v
C206	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C207	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C208	1-124-779-00	ELECT CHIP	10uF	20%	16v
C209	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C211	1-127-539-11	ELECT(SOLID)	1uF	20%	25V
C212	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C213	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C214	1-164-346-11	CERAMIC CHIP	1uF		16V
C215	1-124-779-00	ELECT CHIP	10uF	20%	16v
C216	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C217	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C218	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C219	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C220	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C221	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C222	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C223	1-136-718-11	FILM, CHIP	0.1uF	5%	25V
C224	1-124-589-11	ELECT	47uF	20%	16V
C225	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C226	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V

Ref. No.	Part No.	Description			Remark
C227	1-135-070-00	TANTALUM CHIP	0.1uF	10%	35V
C228	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C229	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C230	1-135-070-00	TANTALUM CHIP	0.1uF	10%	35V
C231	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C232	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C233	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C234	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C235	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C236	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C237	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C238	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C239	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C240	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C241	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C242	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C244	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C245	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C246	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C310	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C311	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C312	1-124-779-00	ELECT CHIP	10uF	20%	16v
C313	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C314	1-124-779-00	ELECT CHIP	10uF	20%	16v
C315	1-164-346-11	CERAMIC CHIP	1uF		16V
C316	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C317	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C318	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C319	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C320	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C321	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C322	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C323	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C324	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C325	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C326	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C327	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C328	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C329	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C330	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C331	1-164-672-11	CERAMIC CHIP	1500PF	5%	16V
C332	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C334	1-162-638-11	CERAMIC CHIP	1uF		16V
C335	1-162-638-11	CERAMIC CHIP	1uF		16V
C336	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C501	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C502	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C601	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C602	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C603	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C604	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C605	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C606	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C607	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C608	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C609	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C610	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C611	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C612	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C613	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C614	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C801	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C802	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C803	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C805	1-126-607-11	ELECT CHIP	47uF	20%	4V
C806	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C808	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C809	1-126-607-11	ELECT CHIP	47uF	20%	4V
C810	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C812	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C813	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C814	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C815	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C816	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C817	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C820	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C822	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C824	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C825	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C832	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C835	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C836	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C837	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C838	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C840	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C842	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C843	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C844	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C845	1-164-346-11	CERAMIC CHIP	1uF		16V
C846	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C847	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C848	1-162-995-11	CERAMIC CHIP	0.022uF		50V

Ref. No.	Part No.	Description			Remark
C849	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C850	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C851	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C852	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C853	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C854	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C855	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C857	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C858	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C859	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C860	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C861	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C862	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C863	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C864	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C865	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C866	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C867	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C868	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C869	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V
C870	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C871	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C872	1-162-974-11	CERAMIC CHIP	0.01uF		50V

(CONNECTOR)

Ref. No.	Part No.	Description
* CN002	1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P
* CN003	1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P
CN201	1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P
* CN202	1-565-543-21	PIN, CONNECTOR (PC BOARD) 4P
* CN224	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P
* CN225	1-566-766-11	PIN, CONNECTOR (PC BOARD) 11P
CN228	1-580-057-11	PIN, CONNECTOR 4P
CN230	1-573-768-21	PIN, CONNECTOR (1.5MM) (SMD)5P
CN501	1-573-290-21	PIN, CONNECTOR (1.5MM) (SMD)4P
CN801	1-580-057-11	PIN, CONNECTOR 4P
CN802	1-580-057-11	PIN, CONNECTOR 4P

(TRIMMER)

Ref. No.	Part No.	Description
CT101	1-141-331-11	CAP, CHIP TRIMMER (30PF)
CT801	1-141-331-11	CAP, CHIP TRIMMER (30PF)
CT802	1-141-331-11	CAP, CHIP TRIMMER (30PF)

(DIODE)

Ref. No.	Part No.	Description	
D005	8-719-941-86	DIODE	DAN202U
D026	8-719-940-45	DIODE	DWA010
D030	8-719-104-34	DIODE	1S2836
D101	8-719-108-24	DIODE	1SS223
D102	8-719-938-72	DIODE	SB01-05CP
D200	8-719-938-75	DIODE	SB05-05CP

SS-146P

Ref. No.	Part No.	Description		Remark
D201	8-719-938-75	DIODE	SB05-05CP	
D202	8-719-104-34	DIODE	1S2836	
D203	8-719-977-34	DIODE	DTZ12	
D204	8-719-978-23	DIODE	DTZ5. 6-TT11	
D601	8-719-023-27	DIODE	MA704WK-TX	
D801	8-719-404-46	DIODE	MA110	
		⟨ IC ⟩		
IC001	8-752-836-21	IC	CXP80P116Q-1-205	
IC002	8-759-804-72	IC	LB1631M	
IC003	8-759-983-69	IC	LM358PS	
IC005	8-759-009-51	IC	MC14538BF	
IC101	8-759-062-53	IC	uPD75316GF-222-3B9	
IC102	8-759-145-63	IC	uPD7564G-540	
IC103	8-759-937-54	IC	S-81250HG-RD-S	
IC104	8-759-946-03	IC	S-8054ALR-LN-S	
IC200	8-759-107-68	IC	CX20115A	
IC201	8-759-202-45	IC	CX20114	
IC202	8-759-805-06	IC	CXA1127M	
IC203	8-759-100-94	IC	uPC358G2	
IC204	8-759-945-17	IC	MB3775PF	
IC310	8-752-050-54	IC	CXA1449Q	
IC601	8-759-999-02	IC	TL1596CDB	
IC602	8-759-062-54	IC	MC74HC42F-L	
IC603	8-759-044-78	IC	AK6420F	
IC801	8-759-056-00	IC	NJM2266M(T1)	
IC802	8-759-710-62	IC	NJM2246M	
IC804	8-759-998-30	IC	CF79028PG	
IC805	8-759-501-36	IC	MB84256A-LL-PF-E1	
IC807	8-759-209-97	IC	TC4S81F	
IC808	8-759-634-47	IC	M51285BGP	
IC809	8-752-039-49	IC	CXA1393AN	
		⟨ COIL ⟩		
L001	1-412-058-11	INDUCTOR CHIP	10uH	
L101	1-410-393-11	INDUCTOR CHIP	100uH	
L102	1-410-369-11	INDUCTOR CHIP	1uH	
L103	1-216-296-00	INDUCTOR CHIP	0	
L104	1-216-296-00	INDUCTOR CHIP	0	
L200	1-412-058-11	INDUCTOR CHIP	10uH	
L201	1-424-104-11	COIL, CHOKE	10uH	
L202	1-424-106-11	COIL, CHOKE	47uH	
L203	1-424-105-11	COIL, CHOKE	22uH	
L310	1-412-058-11	INDUCTOR CHIP	10uH	
L311	1-408-795-21	INDUCTOR CHIP	330uH	
L312	1-412-058-11	INDUCTOR CHIP	10uH	
L801	1-412-056-11	INDUCTOR CHIP	4. 7uH	
L802	1-412-058-11	INDUCTOR CHIP	10uH	
L803	1-412-056-11	INDUCTOR CHIP	4. 7uH	
L804	1-412-187-11	INDUCTOR	18uH	
L805	1-410-393-11	INDUCTOR CHIP	100uH	
L807	1-412-056-11	INDUCTOR CHIP	4. 7uH	
		⟨ TRANSISTOR ⟩		
Q001	8-729-100-66	TRANSISTOR	2SC1623-L6	
Q003	8-729-100-66	TRANSISTOR	2SC1623-L6	
Q005	8-729-907-00	TRANSISTOR	DTC114EU	
Q006	8-729-822-84	TRANSISTOR	2SB1202FAST	
Q007	8-729-905-35	TRANSISTOR	2SC4081-R	
Q010	8-729-907-03	TRANSISTOR	FMG5	
Q013	8-729-907-26	TRANSISTOR	IMX1	
Q014	8-729-905-35	TRANSISTOR	2SC4081-R	
Q020	8-729-905-12	TRANSISTOR	DTA144EU	
Q021	8-729-905-18	TRANSISTOR	DTC144EU	
Q023	8-729-920-39	TRANSISTOR	IMT-1US	
Q030	8-729-905-18	TRANSISTOR	DTC144EU	
Q101	8-729-402-78	TRANSISTOR	XN6401	
Q102	8-729-402-19	TRANSISTOR	XN6501	
Q103	8-729-402-78	TRANSISTOR	XN6401	
Q104	8-729-216-22	TRANSISTOR	2SA1162-G	
Q105	8-729-109-44	TRANSISTOR	2SK94-X4	
Q106	8-729-905-15	TRANSISTOR	DTC144WU	
Q107	8-729-100-66	TRANSISTOR	2SC1623-L6	
Q108	8-729-905-12	TRANSISTOR	DTA144EU	
Q109	8-729-904-20	TRANSISTOR	FMA2	
Q110	8-729-905-23	TRANSISTOR	2SA1576-R	
Q111	8-729-905-18	TRANSISTOR	DTC144EU	
Q112	8-729-109-44	TRANSISTOR	2SK94-X4	
Q113	8-729-902-96	TRANSISTOR	FMS1	
Q114	8-729-903-82	TRANSISTOR	FMW2	
Q115	8-729-100-66	TRANSISTOR	2SC1623-L6	
Q200	8-729-905-12	TRANSISTOR	DTA144EU	
Q201	8-729-216-22	TRANSISTOR	2SA1162-G	
Q202	8-729-905-35	TRANSISTOR	2SC4081-R	
Q203	8-729-905-12	TRANSISTOR	DTA144EU	
Q204	8-729-905-61	TRANSISTOR	DTC124EU	
Q205	8-729-905-18	TRANSISTOR	DTC144EU	
Q206	8-729-100-66	TRANSISTOR	2SC1623-L6	
Q207	8-729-805-25	TRANSISTOR	2SB1121-S	
Q208	8-729-119-83	TRANSISTOR	2SC4175-B3	
Q209	8-729-805-25	TRANSISTOR	2SB1121-S	
Q210	8-729-162-13	TRANSISTOR	2SC1621-B3	
Q211	8-729-905-18	TRANSISTOR	DTC144EU	
Q212	8-729-920-39	TRANSISTOR	IMT-1US	
Q213	8-729-905-18	TRANSISTOR	DTC144EU	
Q214	8-729-920-XX	TRANSISTOR	DTA114EUT106	
Q310	8-729-216-22	TRANSISTOR	2SA1162-G	
Q311	8-729-905-35	TRANSISTOR	2SC4081-R	
Q312	8-729-905-24	TRANSISTOR	2SA1576-S	
Q501	8-729-905-35	TRANSISTOR	2SC4081-R	

Ref. No.	Part No.	Description				Remark
Q502	8-729-905-18	TRANSISTOR	DTC144EU			
Q601	8-729-905-12	TRANSISTOR	DTA144EU			
Q602	8-729-905-XX	TRANSISTOR	DTC114TUT106			
Q603	8-729-403-10	TRANSISTOR	XN6215			
Q604	8-729-921-25	TRANSISTOR	FMC2			
Q801	8-729-905-23	TRANSISTOR	2SA1576-R			
Q802	8-729-905-35	TRANSISTOR	2SC4081-R			
Q803	8-729-905-18	TRANSISTOR	DTC144EU			
Q806	8-729-905-35	TRANSISTOR	2SC4081-R			
Q807	8-729-905-18	TRANSISTOR	DTC144EU			
Q808	8-729-905-35	TRANSISTOR	2SC4081-R			
Q809	8-729-905-35	TRANSISTOR	2SC4081-R			
Q810	8-729-905-23	TRANSISTOR	2SA1576-R			
Q811	8-729-905-18	TRANSISTOR	DTC144EU			
Q812	8-729-905-35	TRANSISTOR	2SC4081-R			
Q813	8-729-905-23	TRANSISTOR	2SA1576-R			
Q814	8-729-120-28	TRANSISTOR	2SC1623-L5L6			
Q815	8-729-120-28	TRANSISTOR	2SC1623-L5L6			
		(RESISTOR)				
R001	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R005	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R006	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R010	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R011	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R013	1-216-809-11	METAL CHIP	100	5%	1/16W	
R014	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R015	1-216-818-11	METAL CHIP	560	5%	1/16W	
R019	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R020	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R021	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R023	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R024	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R033	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R034	1-216-815-11	METAL CHIP	330	5%	1/16W	
R035	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R036	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R037	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R038	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R039	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R041	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R042	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R043	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R044	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R045	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R046	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R047	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R052	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R053	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R054	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R071	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R072	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R073	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R074	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R080	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R090	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R101	1-218-172-11	METAL CHIP	680K	1%	1/10W	
R102	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R103	1-218-172-11	METAL CHIP	680K	1%	1/10W	
R104	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R105	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R106	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R107	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R108	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R110	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R111	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R112	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R113	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R114	1-216-809-11	METAL CHIP	100	5%	1/16W	
R115	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	
R116	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R117	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R118	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R119	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R120	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R121	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R123	1-216-813-11	METAL CHIP	220	5%	1/16W	
R124	1-216-813-11	METAL CHIP	220	5%	1/16W	
R125	1-216-813-11	METAL CHIP	220	5%	1/16W	
R126	1-216-813-11	METAL CHIP	220	5%	1/16W	
R127	1-216-809-11	METAL CHIP	100	5%	1/16W	
R128	1-216-809-11	METAL CHIP	100	5%	1/16W	
R129	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R130	1-216-809-11	METAL CHIP	100	5%	1/16W	
R131	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R132	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R133	1-216-864-11	METAL CHIP	0	5%	1/16W	
R135	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R136	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R137	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R138	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R139	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R140	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R141	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R142	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R143	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R144	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R145	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R146	1-216-833-11	METAL CHIP	10K	5%	1/16W	

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Ref. No.	Part No.	Description				Remark
R147	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R148	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R149	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R150	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R152	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R153	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R154	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R158	1-216-813-11	METAL CHIP	220	5%	1/16W	
R159	1-216-813-11	METAL CHIP	220	5%	1/16W	
R160	1-216-813-11	METAL CHIP	220	5%	1/16W	
R161	1-216-813-11	METAL CHIP	220	5%	1/16W	
R163	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R165	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R166	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R167	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R168	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R169	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R170	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R172	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R173	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R174	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R176	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R177	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R178	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R179	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R180	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R181	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R182	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R183	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R200	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R203	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R204	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R205	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R206	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R208	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R209	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R210	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R211	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R212	1-216-809-11	METAL CHIP	100	5%	1/16W	
R213	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R216	1-216-820-11	METAL CHIP	820	5%	1/16W	
R217	1-216-814-11	METAL CHIP	270	5%	1/16W	
R218	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R219	1-216-789-11	METAL CHIP	2.2	5%	1/16W	
R220	1-216-789-11	METAL CHIP	2.2	5%	1/16W	
R221	1-216-789-11	METAL CHIP	2.2	5%	1/16W	
R222	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R223	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R224	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R225	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R226	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R227	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R228	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R229	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R230	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R231	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R232	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R233	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R234	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R235	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R236	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R237	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R238	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R239	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R240	1-216-813-11	METAL CHIP	220	5%	1/16W	
R241	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R242	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R243	1-216-819-11	METAL CHIP	680	5%	1/16W	
R244	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R245	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R246	1-216-819-11	METAL CHIP	680	5%	1/16W	
R247	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R248	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R249	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R250	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R251	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R252	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R253	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R254	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R281	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R310	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R311	1-216-820-11	METAL CHIP	820	5%	1/16W	
R312	1-216-817-11	METAL CHIP	470	5%	1/16W	
R313	1-216-817-11	METAL CHIP	470	5%	1/16W	
R314	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R315	1-216-818-11	METAL CHIP	560	5%	1/16W	
R316	1-216-814-11	METAL CHIP	270	5%	1/16W	
R317	1-216-812-11	METAL CHIP	180	5%	1/16W	
R318	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R322	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R323	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R324	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R325	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R326	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R327	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R328	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R329	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R330	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R331	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R332	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R333	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R335	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R501	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R502	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R505	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R506	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R507	1-216-809-11	METAL CHIP	100	5%	1/16W	
R508	1-216-817-11	METAL CHIP	470	5%	1/16W	
R510	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R511	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R512	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R513	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R514	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R515	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R516	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R517	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R518	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R519	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R520	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R521	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R522	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R523	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R524	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R525	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R526	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R527	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R601	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R602	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R603	1-216-864-11	METAL CHIP	0	5%	1/16W	
R604	1-216-864-11	METAL CHIP	0	5%	1/16W	
R605	1-216-864-11	METAL CHIP	0	5%	1/16W	
R607	1-216-817-11	METAL CHIP	470	5%	1/16W	
R608	1-216-817-11	METAL CHIP	470	5%	1/16W	
R609	1-216-817-11	METAL CHIP	470	5%	1/16W	
R610	1-216-817-11	METAL CHIP	470	5%	1/16W	
R611	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R612	1-216-813-11	METAL CHIP	220	5%	1/16W	
R613	1-216-813-11	METAL CHIP	220	5%	1/16W	
R615	1-216-661-11	METAL CHIP	2.7K	0.5%	1/10W	
R616	1-216-809-11	METAL CHIP	100	5%	1/16W	
R617	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R618	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R619	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R623	1-216-797-11	METAL CHIP	10	5%	1/16W	
R624	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R625	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R626	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R627	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R628	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R629	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R630	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R631	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R632	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R801	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R802	1-216-809-11	METAL CHIP	100	5%	1/16W	
R803	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R804	1-216-801-11	METAL CHIP	22	5%	1/16W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R806	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R807	1-216-819-11	METAL CHIP	680	5%	1/16W	
R808	1-216-814-11	METAL CHIP	270	5%	1/16W	
R809	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R810	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R811	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R812	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R815	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R820	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R823	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R824	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R826	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R827	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R830	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R831	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R833	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R834	1-216-817-11	METAL CHIP	470	5%	1/16W	
R836	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R838	1-216-864-11	METAL CHIP	0	5%	1/16W	
R839	1-216-864-11	METAL CHIP	0	5%	1/16W	
R840	1-216-864-11	METAL CHIP	0	5%	1/16W	
R841	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R842	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R844	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R846	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R847	1-216-864-11	METAL CHIP	0	5%	1/16W	
R853	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R854	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R855	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R856	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R857	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R858	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R859	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R860	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R861	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R862	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R863	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R865	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R866	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R867	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R868	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R869	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R870	1-216-815-11	METAL CHIP 330 5% 1/16W	
R871	1-216-806-11	METAL GLAZE 56 5% 1/16W	
R872	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R873	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R874	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R875	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R876	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R877	1-216-814-11	METAL CHIP 270 5% 1/16W	
R878	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R879	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R881	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R882	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R883	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R884	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R885	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R890	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R891	1-216-815-11	METAL CHIP 330 5% 1/16W	
R892	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R893	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R894	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R895	1-216-864-11	METAL CHIP 0 5% 1/16W	
R896	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R897	1-216-814-11	METAL CHIP 270 5% 1/16W	
R898	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R899	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R900	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R906	1-216-296-00	METAL CHIP 0 5% 1/8W	
R908	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R910	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R911	1-216-809-11	METAL CHIP 100 5% 1/16W	
R912	1-216-821-11	METAL CHIP 1K 5% 1/16W	
		(VARIABLE RESISTOR)	
RV201	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV801	1-238-092-11	RES, ADJ, CERMET 47K	
RV802	1-238-089-11	RES, ADJ, CERMET 4.7K	
		(THERMISTOR)	
TH001	1-800-200-00	THERMISTOR S-3K	
TH801	1-809-354-11	THERMISTOR, NTC (2125)	
		(CONNECTOR)	
W002	1-633-614-11	FP-216 FLEXIBLE BOARD	
W006	1-690-766-11	CORE, FLAT TYPE (15 CORE)	
W600	1-690-765-11	CORE, FLAT TYPE (12 CORE)	
		(CRYSTAL)	
X001	1-577-349-21	OSCILLATOR, CRYSTAL 16MHz (16MHz)	

Ref. No.	Part No.	Description	Remark
X101	1-578-713-21	VIBLATOR, CERAMIC (4.19MHz)	
X102	1-579-550-11	VIBRATOR, CRYSTAL	
X103	1-579-551-11	VIBRATOR, CERAMIC (700KHz)	
X310	1-578-709-11	VIBRATOR, CRYSTAL (1MHz)	
X801	1-579-613-21	VIBRATOR, CRYSTAL (17.734MHz)	
X802	1-578-690-11	VIBRATOR, CERAMIC (500KHz)	
**			
*	1-633-599-21	SW-113P BOARD (Ref.No 7000 Series) *************	
		(CONNECTOR)	
* CN821	1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	
CN822	1-565-874-11	PIN, CONNECTOR (PC BOARD) 2P	
		(DIODE)	
D821	8-719-940-45	DIODE DWA010	
		(SWITCH)	
S821	1-570-689-11	SWITCH, KEY BOARD (START/STOP)	
S822	1-553-977-00	SWITCH, SLIDE (STANDBY/LOCK)	
**			
*	A-7071-143-A	TL-18P BOARD, COMPLETE ********************** (Ref.No 8000 Series)	
		(DIODE)	
D950	8-719-941-34	DIODE GL-1HD51	
		(RESISTOR)	
R950	1-216-033-00	METAL CHIP 220 5% 1/10W	
**			
*	A-7071-144-A	TL-19P BOARD, COMPLETE ********************** (Ref.No 8000 Series)	
		(DIODE)	
D955	8-719-941-34	DIODE GL-1HD51	
**			

Ref. No.	Part No.	Description			Remark
	A-7063-083-A	VC-110P BOARD, COMPLETE			
		***********************			
		(Ref.No 1000 Series)			
	A-7068-186-A	MX-10AP BOARD, COMPLETE (HIC)			
*	3-744-763-01	CASE, SHIELD,' VC			

(CAPACITOR)

Ref. No.	Part No.	Description			Remark
C301	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C401	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C402	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C403	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C404	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C406	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C407	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C408	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C409	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C410	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C411	1-124-566-11	ELECT	120uF	20%	6.3V
C412	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C413	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C414	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C415	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C416	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C418	1-162-638-11	CERAMIC CHIP	1uF		16V
C420	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C423	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C424	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C425	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C426	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C501	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C503	1-162-638-11	CERAMIC CHIP	1uF		16V
C506	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C507	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C508	1-135-072-21	TANTALUM CHIP	0.22uF	10%	35V
C509	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C510	1-128-004-11	ELECT CHIP	10uF	20%	16V
C511	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C512	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C513	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C514	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C521	1-162-638-11	CERAMIC CHIP	1uF		16V
C651	1-126-217-11	ELECT CHIP	15uF	20%	10V
C654	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C655	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C656	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C657	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C658	1-128-004-11	ELECT CHIP	10uF	20%	16V
C659	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C660	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C661	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C662	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C663	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C664	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C665	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C666	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C667	1-163-038-00	CERAMIC CHIP	0.1uF		25V

(CONNECTOR)

Ref. No.	Part No.	Description	Remark
CN301	1-568-338-11	CONNECTOR, BOARD TO BOARD 24P	
CN302	1-568-331-11	CONNECTOR, BOARD TO BOARD 10P	
CN303	1-566-533-11	CONNECTOR, FPC (ZIF) 17P	
CN304	1-569-775-21	PIN, CONNECTOR 5P	
CN305	1-566-528-21	CONNECTOR, FPC (ZIF) 12P	
L CN306	1-580-056-21	PIN, CONNECTOR 3P	
CN307	1-580-057-11	PIN, CONNECTOR 4P	
CN308	1-566-757-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN651	1-566-187-11	PIN, CONNECTOR (PC BOARD) 8P	
CN652	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P	
CN653	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN654	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P	
CN655	1-565-530-11	PIN, CONNECTOR (PC BOARD) 5P	

(DIODE)

Ref. No.	Part No.	Description	Remark
D501	8-719-404-46	DIODE MA110	
D502	8-719-404-46	DIODE MA110	
D503	8-719-404-46	DIODE MA110	
D504	8-719-404-46	DIODE MA110	
D651	8-719-420-90	DIODE MA8051-M	

(FILTER)

Ref. No.	Part No.	Description	Remark
FL301	1-236-759-21	FILTER, LOW PASS (TRAP)	
FL302	1-415-731-21	DELAY LINE, LC (YH)	
FL303	1-415-819-11	DELAY LINE, LC	
FL401	1-415-763-21	DELAY LINE, LC	
FL402	1-415-730-21	DELAY LINE, LC (100NS)	

(IC)

Ref. No.	Part No.	Description	Remark
IC301	8-759-635-27	IC M62352GP	
IC401	8-752-056-59	IC CXA1592R	
IC402	8-752-056-04	IC CXA1609N	
IC501	8-759-068-25	IC MC68HC11E9FUSC400467	
IC502	8-759-008-95	IC MC14028BF	
IC504	8-759-635-27	IC M62352GP	
IC508	8-759-937-56	IC S-8054ALB-LM-S	
IC509	8-759-008-67	IC MC14066BF	
IC510	8-759-998-96	IC LM324D	
IC651	8-759-981-82	IC RC3414M	
IC652	8-759-037-20	IC MPC1737M	
IC653	8-759-998-98	IC LM358D	
IC655	8-759-300-71	IC HD14053BFP	

Ref. No.	Part No.	Description				Remark
		(COIL)				
L901	1-410-645-31	INDUCTOR	100uH			
L902	1-410-384-31	INDUCTOR CHIP	18uH			
⚠L903	1-459-876-81	COIL, FERRITE (HLC)				
		(TRANSISTOR)				
Q903	8-729-106-68	TRANSISTOR	2SD1615A-GP			
Q904	8-729-216-31	TRANSISTOR	2SA1163-G			
		(RESISTOR)				
R902	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R903	1-216-041-00	METAL CHIP	470	5%	1/10W	
R907	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R908	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R909	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R911	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R912	1-216-295-00	METAL CHIP	0	5%	1/10W	
R913	1-216-295-00	METAL CHIP	0	5%	1/10W	
R914	1-216-133-00	METAL CHIP	3.3M	5%	1/10W	
R915	1-216-133-00	METAL CHIP	3.3M	5%	1/10W	
R916	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R917	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R919	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R920	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R921	1-216-013-00	METAL CHIP	33	5%	1/10W	
R922	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R923	1-216-025-00	METAL CHIP	100	5%	1/10W	
R924	1-216-306-11	METAL CHIP	3.9	5%	1/10W	
R925	1-216-336-11	METAL CHIP	47K	1%	1/10W	
R926	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R928	1-216-870-11	METAL CHIP	180K	1%	1/10W	
R929	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R930	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R931	1-216-121-00	METAL CHIP	1M	5%	1/10W	
		(VARIABLE RESISTOR)				
RV901	1-238-647-11	RES, ADJ, METAL GLAZE	4.7M			
		(TRANSFORMER)				
⚠T901	1-439-481-21	TRANSFORMER ASSY, FLYBACK				
		(THERMISTOR)				
TH901	1-809-350-21	THERMISTOR (500 Ω)				

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Ref. No.	Part No.	Description				Remark
	A-7063-080-A	VI-100 BOARD, COMPLETE				
		**********************				
		(Ref.No 2000 Series)				
	A-7068-176-A	HD-8P BOARD, COMPLETE (HIC)				
*	3-940-036-01	PLATE (B), SHIELD, FL				
		(CAPACITOR)				
C201	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C202	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C203	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C204	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C205	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C206	1-163-986-00	CERAMIC CHIP	0.027uF	10%	25V	
C207	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V	
C208	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C209	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C251	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C252	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	
C254	1-162-955-11	CERAMIC CHIP	150PF	5%	50V	
C255	1-162-951-11	CERAMIC CHIP	68PF	5%	50V	
C259	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V	
C260	1-162-952-11	CERAMIC CHIP	82PF	5%	50V	
C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C262	1-162-950-11	CERAMIC CHIP	56PF	5%	50V	
C264	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C265	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C266	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C268	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C269	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C270	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C271	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C274	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C275	1-162-954-11	CERAMIC CHIP	120PF	5%	50V	
C276	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C277	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C278	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C280	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C281	1-162-950-11	CERAMIC CHIP	56PF	5%	50V	
C402	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C403	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C405	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C406	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C407	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C408	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C409	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C411	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C412	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C413	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C414	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C417	1-162-997-11	CERAMIC CHIP	10PF	0.5PF	50V
C418	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C419	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C420	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C421	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C422	1-135-159-21	TANTALUM CHIP	10uF	10%	20V
C426	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C427	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C429	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C430	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C431	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C433	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C434	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C435	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C436	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C437	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C438	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C439	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C442	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C443	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C444	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C445	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C447	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C448	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C449	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C450	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C452	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C453	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C454	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C456	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C457	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C458	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C459	1-131-388-00	TANTALUM	68uF	10%	6.3V
C460	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C461	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C462	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C463	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C464	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C465	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C466	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C467	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C468	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C469	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C470	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C471	1-135-072-21	TANTALUM CHIP	0.22uF	10%	35V
C472	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C473	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C474	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C475	1-126-207-11	ELECT CHIP	33uF	20%	4V
C476	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C477	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C478	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C479	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C480	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C481	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C483	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C485	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C486	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C487	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C488	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C489	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C493	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C494	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C495	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C496	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C497	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C498	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C499	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C500	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C501	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C502	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C505	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C507	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C510	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C512	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C513	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C514	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C515	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C516	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C517	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C518	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C519	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C520	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C522	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C524	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C525	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C526	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C527	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C528	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C529	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C531	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C532	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C533	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C534	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C535	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C536	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

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Ref. No.	Part No.	Description			Remark
C537	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C540	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C541	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C542	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C543	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C545	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C601	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C602	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C603	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C604	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C605	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C606	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C607	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C608	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C609	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C610	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C612	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C613	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C614	1-135-072-21	TANTALUM CHIP	0.22uF	10%	35V
C615	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C616	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C617	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C620	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C621	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C622	1-135-170-21	TANTALUM CHIP	6.8uF	20%	4V
C623	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C624	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C625	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C626	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C627	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C628	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C629	1-163-108-00	CERAMIC CHIP	43PF	5%	50V
C630	1-135-073-00	TANTALUM CHIP	0.33uF	10%	35V
C631	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C632	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C633	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C634	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C635	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C637	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C638	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C639	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C640	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C641	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C642	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C643	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C644	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C645	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C647	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C648	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C649	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C650	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C651	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C654	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C655	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C656	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C657	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V
C658	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C659	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C660	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C661	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C662	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C663	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C664	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C665	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C666	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C667	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C668	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C671	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C672	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C675	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C676	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C677	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C678	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C679	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C680	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C682	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C683	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C684	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C687	1-135-170-21	TANTALUM CHIP	6.8uF	20%	4V
C688	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C690	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C691	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C692	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C702	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C703	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C704	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C705	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C706	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C707	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C708	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C709	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C710	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C711	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C712	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C713	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C719	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C720	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C722	1-135-158-21	TANTALUM CHIP	15uF	20%	4V
C724	1-162-940-11	CERAMIC CHIP	9PF	0.5PF	50V
C725	1-135-091-00	TANTALUM CHIP	1uF	20%	16V

Ref. No.	Part No.	Description	Remark
C726	1-163-097-00	CERAMIC CHIP 15PF 5%	50V
C728	1-162-955-11	CERAMIC CHIP 150PF 5%	50V
C729	1-163-035-00	CERAMIC CHIP 0.047uF	50V
C730	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C732	1-163-100-00	CERAMIC CHIP 20PF 5%	50V
C733	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C734	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C737	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C738	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C739	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C740	1-162-959-11	CERAMIC CHIP 330PF 5%	50V
C741	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C742	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
C743	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
		(CONNECTOR)	
* CN401	1-565-882-11	PIN, CONNECTOR (PC BOARD) 10P	
* CN402	1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P	
* CN404	1-566-765-11	PIN, CONNECTOR (PC BOARD) 10P	
* CN405	1-566-766-11	PIN, CONNECTOR (PC BOARD) 11P	
* CN406	1-565-543-31	PIN, CONNECTOR (PC BOARD) 4P	
* CN407	1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN408	1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN409	1-566-184-11	PIN, CONNECTOR (PC BOARD) 5P	
* CN410	1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
* CN413	1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN414	1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	
		(TRIMMER)	
CV401	1-141-331-11	CAP, CHIP TRIMMER (30PF)	
CV402	1-141-331-11	CAP, CHIP TRIMMER (30PF)	
CV601	1-141-331-11	CAP, CHIP TRIMMER (30PF)	
CV602	1-141-331-11	CAP, CHIP TRIMMER (30PF)	
		(DIODE)	
D201	8-719-941-09	DIODE DAP202U	
D202	8-719-941-86	DIODE DAN202U	
D204	8-719-941-86	DIODE DAN202U	
D205	8-719-941-86	DIODE DAN202U	
D251	8-719-941-86	DIODE DAN202U	
D252	8-719-941-86	DIODE DAN202U	
D253	8-719-941-86	DIODE DAN202U	
D254	8-719-941-09	DIODE DAP202U	
D256	8-719-941-86	DIODE DAN202U	
D257	8-719-941-86	DIODE DAN202U	
D258	8-719-941-86	DIODE DAN202U	
D259	8-719-941-86	DIODE DAN202U	
D260	8-719-941-86	DIODE DAN202U	
D261	8-719-941-86	DIODE DAN202U	
D263	8-719-941-86	DIODE DAN202U	

Ref. No.	Part No.	Description	Remark
D264	8-719-941-86	DIODE DAN202U	
D267	8-719-106-16	DIODE RD6.8M-B1	
D268	8-719-941-86	DIODE DAN202U	
D269	8-719-941-09	DIODE DAP202U	
D270	8-719-941-86	DIODE DAN202U	
D401	8-719-941-86	DIODE DAN202U	
D402	8-719-941-86	DIODE DAN202U	
D404	8-719-941-86	DIODE DAN202U	
D405	8-719-941-86	DIODE DAN202U	
D406	8-719-941-09	DIODE DAP202U	
D407	8-719-941-86	DIODE DAN202U	
D409	8-719-941-86	DIODE DAN202U	
D411	8-719-949-46	DIODE 1T32	
D413	8-719-941-86	DIODE DAN202U	
D414	8-719-941-86	DIODE DAN202U	
D418	8-719-800-76	DIODE 1SS226	
D419	8-719-941-86	DIODE DAN202U	
D420	8-719-941-86	DIODE DAN202U	
D421	8-719-941-86	DIODE DAN202U	
D422	8-719-941-86	DIODE DAN202U	
D423	8-719-941-86	DIODE DAN202U	
D424	8-719-941-86	DIODE DAN202U	
D425	8-719-941-86	DIODE DAN202U	
D602	8-719-800-76	DIODE 1SS226	
D603	8-719-400-18	DIODE MA152WK	
D604	8-719-800-76	DIODE 1SS226	
D605	8-719-800-76	DIODE 1SS226	
D609	8-719-941-86	DIODE DAN202U	
D614	8-719-800-76	DIODE 1SS226	
D616	8-719-404-40	DIODE MA121	
D620	8-719-941-86	DIODE DAN202U	
D621	8-719-941-86	DIODE DAN202U	
D622	8-719-941-86	DIODE DAN202U	
D623	8-719-800-76	DIODE 1SS226	
D624	8-719-820-05	DIODE 1SS181	
		(DELAY LINE)	
DL601	1-415-518-31	DELAY LINE, DUAL 1H-2H	
DL603	1-415-696-11	DL, LC	
DL604	1-415-646-11	DL, LC	
		(FILTER)	
FL401	1-236-540-11	LPF (DEMOD OUT)	
FL402	1-236-539-11	LPF (REC Y)	
FL602	1-236-538-11	BPF	
FL603	1-409-394-11	TRAP, CHROMA EMPHASIS	
FL604	1-236-537-11	BPF	
FL605	1-235-632-11	BPF (3.7MHz)	
FL606	1-235-633-11	BPF (5.17MHz)	

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Ref. No.	Part No.	Description	Remark
		< IC >	
IC251	8-759-012-00	IC MC10H116M	
IC401	8-759-710-86	IC NJM2233BM	
IC403	8-759-710-29	IC NJM2235M	
IC404	8-759-710-29	IC NJM2235M	
IC405	8-759-009-22	IC MC14094BF	
IC406	8-759-970-80	IC MB673198U	
IC407	8-759-061-75	IC uPD6451AGT-061-E2	
IC408	8-759-710-12	IC NJM2230M	
IC409	8-752-031-01	IC CXA1047M	
IC410	8-752-032-97	IC CXA1230AR	
IC601	8-752-202-10	IC CX22021-T1	
IC602	8-752-003-22	IC CX20032	
IC603	8-759-202-67	IC CX20117	
IC604	8-752-351-53	IC CX23054-T6	
IC605	8-759-710-07	IC NJM2234M	
IC606	8-759-710-07	IC NJM2234M	
IC609	8-759-925-60	IC BA401	
		< COIL >	
L201	1-410-391-11	INDUCTOR CHIP 68uH	
L251	1-410-393-11	INDUCTOR CHIP 100uH	
L252	1-412-067-21	INDUCTOR CHIP 330uH	
L253	1-410-656-11	INDUCTOR CHIP 150uH	
L255	1-410-380-31	INDUCTOR CHIP 8.2uH	
L258	1-410-383-31	INDUCTOR CHIP 15uH	
L401	1-412-058-11	INDUCTOR CHIP 10uH	
L402	1-408-797-11	INDUCTOR CHIP 470uH	
L403	1-410-390-11	INDUCTOR CHIP 56uH	
L404	1-410-382-31	INDUCTOR CHIP 12uH	
L405	1-410-381-11	INDUCTOR CHIP 10uH	
L407	1-410-387-11	INDUCTOR CHIP 33uH	
L408	1-412-058-11	INDUCTOR CHIP 10uH	
L411	1-410-386-11	INDUCTOR CHIP 27uH	
L412	1-410-380-31	INDUCTOR CHIP 8.2uH	
L413	1-412-058-11	INDUCTOR CHIP 10uH	
L414	1-412-058-11	INDUCTOR CHIP 10uH	
L416	1-410-393-11	INDUCTOR CHIP 100uH	
L417	1-410-391-11	INDUCTOR CHIP 68uH	
L419	1-410-378-11	INDUCTOR CHIP 5.6uH	
L421	1-410-382-31	INDUCTOR CHIP 12uH	
L601	1-410-657-21	INDUCTOR CHIP 180uH	
L602	1-410-385-11	INDUCTOR CHIP 22uH	
L603	1-410-393-11	INDUCTOR CHIP 100uH	
L604	1-410-656-11	INDUCTOR CHIP 150uH	
L605	1-410-655-31	INDUCTOR CHIP 120uH	
L606	1-410-393-11	INDUCTOR CHIP 100uH	
L607	1-412-058-11	INDUCTOR CHIP 10uH	
L608	1-410-385-11	INDUCTOR CHIP 22uH	
L609	1-410-391-11	INDUCTOR CHIP 68uH	
L610	1-410-369-11	INDUCTOR CHIP 1uH	
L611	1-410-369-11	INDUCTOR CHIP 1uH	
L612	1-412-058-11	INDUCTOR CHIP 10uH	
L613	1-412-058-11	INDUCTOR CHIP 10uH	
L614	1-408-777-00	INDUCTOR CHIP 10uH	
L616	1-410-388-21	INDUCTOR CHIP 39uH	
L617	1-410-386-11	INDUCTOR CHIP 27uH	
L620	1-412-058-11	INDUCTOR CHIP 10uH	
L621	1-410-393-11	INDUCTOR CHIP 100uH	
L623	1-408-776-00	INDUCTOR CHIP 8.2uH	
L624	1-410-387-11	INDUCTOR CHIP 33uH	
L626	1-410-385-11	INDUCTOR CHIP 22uH	
L627	1-410-393-11	INDUCTOR CHIP 100uH	
		< VARIABLE COIL >	
LV601	1-404-594-11	COIL, VARIABLE (15uH)	
		< TRANSISTOR >	
Q201	8-729-905-23	TRANSISTOR 2SA1576-R	
Q202	8-729-903-10	TRANSISTOR FMW1	
Q203	8-729-216-22	TRANSISTOR 2SA1162-G	
Q204	8-729-903-10	TRANSISTOR FMW1	
Q205	8-729-905-23	TRANSISTOR 2SA1576-R	
Q206	8-729-402-42	TRANSISTOR UN5213	
Q207	8-729-905-35	TRANSISTOR 2SC4081-R	
Q208	8-729-905-23	TRANSISTOR 2SA1576-R	
Q209	8-729-905-35	TRANSISTOR 2SC4081-R	
Q210	8-729-403-35	TRANSISTOR UN5113	
Q211	8-729-905-96	TRANSISTOR DTA114TU	
Q212	8-729-905-96	TRANSISTOR DTA114TU	
Q213	8-729-402-42	TRANSISTOR UN5213	
Q214	8-729-905-09	TRANSISTOR DTA144WU	
Q215	8-729-403-35	TRANSISTOR UN5113	
Q216	8-729-402-42	TRANSISTOR UN5213	
Q217	8-729-403-35	TRANSISTOR UN5113	
Q220	8-729-905-23	TRANSISTOR 2SA1576-R	
Q221	8-729-905-35	TRANSISTOR 2SC4081-R	
Q225	8-729-402-42	TRANSISTOR UN5213	
Q226	8-729-905-09	TRANSISTOR DTA144WU	
Q228	8-729-402-42	TRANSISTOR UN5213	
Q251	8-729-905-35	TRANSISTOR 2SC4081-R	
Q252	8-729-402-42	TRANSISTOR UN5213	
Q253	8-729-402-42	TRANSISTOR UN5213	
Q254	8-729-402-42	TRANSISTOR UN5213	
Q256	8-729-402-42	TRANSISTOR UN5213	
Q257	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q258	8-729-402-42	TRANSISTOR UN5213	
Q261	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q262	8-729-402-42	TRANSISTOR UN5213	
Q263	8-729-140-63	TRANSISTOR 2SA1611-M5M6	

Ref. No.	Part No.	Description	Remark
Q264	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q265	8-729-403-07	TRANSISTOR XN1213	
Q266	8-729-403-35	TRANSISTOR UN5113	
Q267	8-729-402-42	TRANSISTOR UN5213	
Q268	8-729-402-42	TRANSISTOR UN5213	
Q269	8-729-402-42	TRANSISTOR UN5213	
Q270	8-729-403-35	TRANSISTOR UN5113	
Q271	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q272	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q273	8-729-402-42	TRANSISTOR UN5213	
Q274	8-729-402-42	TRANSISTOR UN5213	
Q275	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q276	8-729-402-42	TRANSISTOR UN5213	
Q277	8-729-905-35	TRANSISTOR 2SC4081-R	
Q278	8-729-905-23	TRANSISTOR 2SA1576-R	
Q279	8-729-403-35	TRANSISTOR UN5113	
Q280	8-729-921-58	TRANSISTOR DTA144TU	
Q282	8-729-402-42	TRANSISTOR UN5213	
Q283	8-729-905-09	TRANSISTOR DTA144WU	
Q284	8-729-905-15	TRANSISTOR DTC144WU	
Q285	8-729-403-35	TRANSISTOR UN5113	
Q286	8-729-402-42	TRANSISTOR UN5213	
Q287	8-729-900-51	TRANSISTOR DTA114TK	
Q402	8-729-810-13	TRANSISTOR 2SA1677	
Q403	8-729-810-13	TRANSISTOR 2SA1677	
Q404	8-729-402-42	TRANSISTOR UN5213	
Q406	8-729-402-42	TRANSISTOR UN5213	
Q407	8-729-905-35	TRANSISTOR 2SC4081-R	
Q408	8-729-402-42	TRANSISTOR UN5213	
Q409	8-729-402-42	TRANSISTOR UN5213	
Q410	8-729-905-35	TRANSISTOR 2SC4081-R	
Q411	8-729-403-35	TRANSISTOR UN5113	
Q412	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q415	8-729-402-42	TRANSISTOR UN5213	
Q416	8-729-402-42	TRANSISTOR UN5213	
Q417	8-729-402-42	TRANSISTOR UN5213	
Q418	8-729-402-42	TRANSISTOR UN5213	
Q419	8-729-402-42	TRANSISTOR UN5213	
Q420	8-729-403-35	TRANSISTOR UN5113	
Q422	8-729-905-23	TRANSISTOR 2SA1576-R	
Q424	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q426	8-729-202-38	TRANSISTOR 2SC3326N-A	
Q427	8-729-905-35	TRANSISTOR 2SC4081-R	
Q428	8-729-907-39	TRANSISTOR IMD2	
Q429	8-729-905-35	TRANSISTOR 2SC4081-R	
Q430	8-729-216-22	TRANSISTOR 2SA1162-G	
Q431	8-729-402-42	TRANSISTOR UN5213	
Q432	8-729-402-42	TRANSISTOR UN5213	
Q433	8-729-403-35	TRANSISTOR UN5113	
Q434	8-729-905-35	TRANSISTOR 2SC4081-R	
Q435	8-729-402-42	TRANSISTOR UN5213	
Q436	8-729-402-42	TRANSISTOR UN5213	
Q437	8-729-905-09	TRANSISTOR DTA144WU	
Q438	8-729-905-35	TRANSISTOR 2SC4081-R	
Q439	8-729-905-35	TRANSISTOR 2SC4081-R	
Q440	8-729-905-35	TRANSISTOR 2SC4081-R	
Q441	8-729-905-35	TRANSISTOR 2SC4081-R	
Q442	8-729-905-35	TRANSISTOR 2SC4081-R	
Q443	8-729-905-45	TRANSISTOR DTA143EU	
Q445	8-729-905-35	TRANSISTOR 2SC4081-R	
Q446	8-729-905-35	TRANSISTOR 2SC4081-R	
Q447	8-729-905-35	TRANSISTOR 2SC4081-R	
Q448	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q449	8-729-402-42	TRANSISTOR UN5213	
Q452	8-729-905-35	TRANSISTOR 2SC4081-R	
Q453	8-729-402-13	TRANSISTOR XN1501	
Q454	8-729-402-42	TRANSISTOR UN5213	
Q455	8-729-403-35	TRANSISTOR UN5113	
Q456	8-729-905-35	TRANSISTOR 2SC4081-R	
Q460	8-729-905-35	TRANSISTOR 2SC4081-R	
Q461	8-729-403-07	TRANSISTOR XN1213	
Q462	8-729-402-42	TRANSISTOR UN5213	
Q469	8-729-216-22	TRANSISTOR 2SA1162-G	
Q470	8-729-905-35	TRANSISTOR 2SC4081-R	
Q471	8-729-402-42	TRANSISTOR UN5213	
Q472	8-729-216-22	TRANSISTOR 2SA1162-G	
Q473	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q474	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q475	8-729-905-23	TRANSISTOR 2SA1576-R	
Q476	8-729-905-35	TRANSISTOR 2SC4081-R	
Q477	8-729-905-35	TRANSISTOR 2SC4081-R	
Q478	8-729-905-23	TRANSISTOR 2SA1576-R	
Q479	8-729-403-35	TRANSISTOR UN5113	
Q480	8-729-402-42	TRANSISTOR UN5213	
Q481	8-729-403-35	TRANSISTOR UN5113	
Q482	8-729-402-42	TRANSISTOR UN5213	
Q483	8-729-402-42	TRANSISTOR UN5213	
Q485	8-729-905-23	TRANSISTOR 2SA1576-R	
Q486	8-729-905-23	TRANSISTOR 2SA1576-R	
Q487	8-729-402-42	TRANSISTOR UN5213	
Q488	8-729-810-13	TRANSISTOR 2SA1677	
Q489	8-729-810-13	TRANSISTOR 2SA1677	
Q490	8-729-402-42	TRANSISTOR UN5213	
Q491	8-729-905-23	TRANSISTOR 2SA1576-R	
Q492	8-729-402-42	TRANSISTOR UN5213	
Q493	8-729-402-42	TRANSISTOR UN5213	
Q497	8-729-402-42	TRANSISTOR UN5213	
Q498	8-729-403-35	TRANSISTOR UN5113	
Q499	8-729-403-35	TRANSISTOR UN5113	
Q500	8-729-905-35	TRANSISTOR 2SC4081-R	

VI-100

Ref. No.	Part No.	Description				Remark
R317	1-216-809-11	METAL CHIP	100	5%	1/16W	
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R319	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R320	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R321	1-216-814-11	METAL CHIP	270	5%	1/16W	
R322	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R323	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R324	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R326	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R327	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R328	1-216-818-11	METAL CHIP	560	5%	1/16W	
R329	1-216-817-11	METAL CHIP	470	5%	1/16W	
R330	1-216-817-11	METAL CHIP	470	5%	1/16W	
R331	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R333	1-216-864-11	METAL CHIP	0	5%	1/16W	
R334	1-216-809-11	METAL CHIP	100	5%	1/16W	
R335	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R336	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R337	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R338	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R357	1-216-817-11	METAL CHIP	470	5%	1/16W	
R358	1-216-817-11	METAL CHIP	470	5%	1/16W	
R359	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R360	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R361	1-216-041-00	METAL CHIP	470	5%	1/10W	
R362	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R363	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R364	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R365	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R366	1-216-820-11	METAL CHIP	820	5%	1/16W	
R367	1-216-816-11	METAL CHIP	390	5%	1/16W	
R368	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R369	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R370	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R371	1-216-295-00	METAL CHIP	0	5%	1/10W	
R372	1-216-043-00	METAL CHIP	560	5%	1/10W	
R373	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R374	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R375	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R376	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R377	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R378	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R379	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R380	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R381	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R382	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R386	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R389	1-216-864-11	METAL CHIP	0	5%	1/16W	
R390	1-216-809-11	METAL CHIP	100	5%	1/16W	
R391	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R392	1-216-813-11	METAL CHIP	220	5%	1/16W	
R393	1-216-819-11	METAL CHIP	680	5%	1/16W	
R394	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R395	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R396	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R397	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R398	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R400	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R401	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R402	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R403	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R404	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R405	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R406	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R407	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R408	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R409	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R410	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R411	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R412	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R413	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R415	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R416	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R417	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R418	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R419	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R420	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R422	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R423	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R424	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R425	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R426	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R428	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R429	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R430	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R433	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R434	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R435	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R436	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R438	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R439	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R440	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R441	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R442	1-216-818-11	METAL CHIP	560	5%	1/16W	
R444	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R445	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R446	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R447	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R448	1-216-602-11	METAL GLAZE	6.8K	1%	1/10W	
R449	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R450	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R451	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R452	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R453	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R454	1-216-045-00	METAL CHIP	680	5%	1/10W	
R455	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R456	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R457	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R458	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R459	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R460	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R461	1-216-817-11	METAL CHIP	470	5%	1/16W	
R462	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R463	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R464	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R465	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R466	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R467	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R468	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R469	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R471	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R472	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R473	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R475	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R476	1-216-023-00	METAL CHIP	82	5%	1/10W	
R477	1-216-039-00	METAL CHIP	390	5%	1/10W	
R478	1-216-039-00	METAL CHIP	390	5%	1/10W	
R479	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R480	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R481	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R482	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R483	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R484	1-216-816-11	METAL CHIP	390	5%	1/16W	
R485	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R486	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R487	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R488	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R489	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R490	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R491	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R492	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R493	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R494	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R495	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R496	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R498	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R499	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R500	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R501	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R502	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R503	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R504	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R505	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R506	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R507	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R508	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R509	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R510	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R511	1-216-864-11	METAL CHIP	0	5%	1/16W	
R512	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R513	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R515	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R516	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R517	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R518	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R519	1-216-819-11	METAL CHIP	680	5%	1/16W	
R520	1-216-864-11	METAL CHIP	0	5%	1/16W	
R521	1-216-813-11	METAL CHIP	220	5%	1/16W	
R522	1-216-813-11	METAL CHIP	220	5%	1/16W	
R523	1-216-813-11	METAL CHIP	220	5%	1/16W	
R525	1-216-819-11	METAL CHIP	680	5%	1/16W	
R526	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R527	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R528	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R529	1-216-817-11	METAL CHIP	470	5%	1/16W	
R530	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R531	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R532	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R535	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R536	1-216-864-11	METAL CHIP	0	5%	1/16W	
R537	1-216-820-11	METAL CHIP	820	5%	1/16W	
R538	1-216-819-11	METAL CHIP	680	5%	1/16W	
R539	1-216-820-11	METAL CHIP	820	5%	1/16W	
R540	1-216-819-11	METAL CHIP	680	5%	1/16W	
R541	1-216-819-11	METAL CHIP	680	5%	1/16W	
R543	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R544	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R554	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R555	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R556	1-216-817-11	METAL CHIP	470	5%	1/16W	
R557	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R558	1-216-817-11	METAL CHIP	470	5%	1/16W	
R559	1-216-817-11	METAL CHIP	470	5%	1/16W	
R560	1-216-864-11	METAL CHIP	0	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R561	1-216-817-11	METAL CHIP	470	5%	1/16W	
R562	1-216-815-11	METAL CHIP	330	5%	1/16W	
R563	1-216-817-11	METAL CHIP	470	5%	1/16W	
R564	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R565	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R566	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R567	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R568	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R569	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R570	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R571	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R572	1-216-820-11	METAL CHIP	820	5%	1/16W	
R579	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R581	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R582	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R583	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R584	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R585	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R586	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R587	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R588	1-216-864-11	METAL CHIP	0	5%	1/16W	
R590	1-216-864-11	METAL CHIP	0	5%	1/16W	
R592	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R593	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R594	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R595	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R596	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R597	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R601	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R602	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R603	1-216-818-11	METAL CHIP	560	5%	1/16W	
R604	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R605	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R606	1-216-809-11	METAL CHIP	100	5%	1/16W	
R607	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R608	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R609	1-216-818-11	METAL CHIP	560	5%	1/16W	
R610	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R611	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R613	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R614	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R615	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R618	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R619	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R620	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R621	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R622	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R623	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R624	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R625	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R626	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R627	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R628	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R629	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R630	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R632	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R636	1-216-295-00	METAL CHIP	0	5%	1/10W	
R637	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R638	1-216-039-00	METAL CHIP	390	5%	1/10W	
R639	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R640	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R641	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R644	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R647	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R649	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R650	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R651	1-216-817-11	METAL CHIP	470	5%	1/16W	
R652	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R653	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R654	1-216-818-11	METAL CHIP	560	5%	1/16W	
R655	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R656	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R657	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R658	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R659	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R660	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R661	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R662	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R663	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R664	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R665	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R666	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R668	1-216-864-11	METAL CHIP	0	5%	1/16W	
R669	1-216-864-11	METAL CHIP	0	5%	1/16W	
R672	1-216-864-11	METAL CHIP	0	5%	1/16W	
R673	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R674	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R675	1-216-818-11	METAL CHIP	560	5%	1/16W	
R676	1-216-819-11	METAL CHIP	680	5%	1/16W	
R677	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R678	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R679	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R680	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R681	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R682	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R683	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R684	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R685	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R686	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R688	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R691	1-216-809-11	METAL CHIP	100	5%	1/16W	
R692	1-216-801-11	METAL CHIP	22	5%	1/16W	
R693	1-216-810-11	METAL CHIP	120	5%	1/16W	
R694	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R695	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R696	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R697	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R698	1-216-814-11	METAL CHIP	270	5%	1/16W	
R699	1-216-810-11	METAL CHIP	120	5%	1/16W	
R700	1-216-039-00	METAL CHIP	390	5%	1/10W	
R702	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R705	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R706	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R707	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R708	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R709	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R710	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R711	1-216-809-11	METAL CHIP	100	5%	1/16W	
R712	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R713	1-216-818-11	METAL CHIP	560	5%	1/16W	
R714	1-216-819-11	METAL CHIP	680	5%	1/16W	
R715	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R716	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R717	1-216-033-00	METAL CHIP	220	5%	1/10W	
R744	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R745	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R746	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R747	1-216-817-11	METAL CHIP	470	5%	1/16W	
R748	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R749	1-216-815-11	METAL CHIP	330	5%	1/16W	
R750	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R751	1-216-039-00	METAL CHIP	390	5%	1/10W	
R752	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R753	1-216-041-00	METAL CHIP	470	5%	1/10W	
R754	1-216-031-00	METAL CHIP	180	5%	1/10W	
R755	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R756	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R757	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R758	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R759	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R760	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R761	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R762	1-216-820-11	METAL CHIP	820	5%	1/16W	
R763	1-216-035-00	METAL CHIP	270	5%	1/10W	
R765	1-216-820-11	METAL CHIP	820	5%	1/16W	
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R772	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R774	1-216-864-11	METAL CHIP	0	5%	1/16W	
R776	1-216-864-11	METAL CHIP	0	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R777	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R779	1-216-864-11	METAL CHIP	0	5%	1/16W	
R787	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R789	1-216-819-11	METAL CHIP	680	5%	1/16W	
R790	1-216-819-11	METAL CHIP	680	5%	1/16W	
R791	1-216-047-00	METAL CHIP	820	5%	1/10W	
R795	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R796	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R797	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R798	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R799	1-216-837-11	METAL CHIP	22K	5%	1/16W	

(VARIABLE RESISTOR)

RV401	1-230-867-11	RES, ADJ, METAL	1K
RV404	1-230-868-11	RES, ADJ, METAL	2.2K
RV405	1-230-867-11	RES, ADJ, METAL	1K
RV406	1-230-868-11	RES, ADJ, METAL	2.2K
RV407	1-230-871-11	RES, ADJ, METAL	22K
RV408	1-230-870-11	RES, ADJ, METAL	10K
RV409	1-230-870-11	RES, ADJ, METAL	10K
RV410	1-230-869-11	RES, ADJ, METAL	4.7K
RV416	1-230-870-11	RES, ADJ, METAL	10K
RV417	1-230-874-11	RES, ADJ, METAL	100K
RV601	1-230-871-11	RES, ADJ, METAL	22K
RV602	1-230-871-11	RES, ADJ, METAL	22K
RV603	1-230-873-11	RES, ADJ, METAL	47K
RV604	1-230-875-21	RES, ADJ, METAL	220K

(TERMINAL)

* TP401	1-535-622-11	PIN, TERMINAL
* TP402	1-535-622-11	PIN, TERMINAL

(FLEXIBLE BOARD)

W403	1-629-777-11	FP-203 BOARD

(CRYSTAL)

X601	1-567-504-81	OSCILLATOR, CRYSTAL	4.433619MHz

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* 1-633-598-21 VJ-6P BOARD (Ref.No 9000 Series)

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(CAPACITOR)

C805	1-126-176-11	ELECT	220uF	20%	10V
C811	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C812	1-163-025-11	CERAMIC CHIP	0.001uF		50V
C813	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C814	1-163-031-11	CERAMIC CHIP	0.01yF		50V

Ref. No.	Part No.	Description	Remark
		(CONNECTOR)	
* CN811	1-566-197-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN812	1-566-200-11	PIN, CONNECTOR (PC BOARD) 7P	
CN813	1-562-183-00	SOCKET 8P	
		(DIODE)	
D818	8-719-106-43	DIODE RD9.1M-B1	
D819	8-719-106-43	DIODE RD9.1M-B1	
		(JACK)	
J813	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		(COIL)	
L815	1-410-369-11	INDUCTOR CHIP 1uH	
L816	1-410-369-11	INDUCTOR CHIP 1uH	
L817	1-410-369-11	INDUCTOR CHIP 1uH	
L818	1-408-958-21	INDUCTOR 1uH	
		(RESISTOR)	
R812	1-216-295-00	METAL CHIP 0 5% 1/10W	

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A-7071-566-A VK-25P BOARD, COMPLETE
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(Ref.No 9000 Series)

Ref. No.	Part No.	Description	Remark
		(DIODE)	
D731	8-719-951-22	IC IMN10	
D732	8-719-951-22	IC IMN10	
D733	8-719-951-22	IC IMN10	
D734	8-719-951-22	IC IMN10	
D735	8-719-951-22	IC IMN10	
D736	8-719-108-24	DIODE 1SS223	
D900	8-719-108-24	DIODE 1SS223	
		(SWITCH)	
S731	1-571-787-11	SWITCH, TACTILE (□)	
S732	1-571-787-11	SWITCH, TACTILE (◀◀)	
S733	1-571-787-11	SWITCH, TACTILE (▷)	
S734	1-571-787-11	SWITCH, TACTILE (▶▶)	
S735	1-571-787-11	SWITCH, TACTILE (❚❚)	
S736	1-571-787-11	SWITCH, TACTILE (=)	
S737	1-571-787-11	SWITCH, TACTILE (=)	
S738	1-571-787-11	SWITCH, TACTILE (INDEX)	
S739	1-571-787-11	SWITCH, TACTILE (INDEX MARK)	
S740	1-571-787-11	SWITCH, TACTILE (INDEX ERASE)	
S741	1-571-787-11	SWITCH, TACTILE (DATA SCREEN)	
S742	1-571-102-11	SWITCH, SLIDE (AUDIO DUB)	
S743	1-571-101-12	SWITCH, SLIDE (POWER CAMERA/OFF/VTR)	
S744	1-571-102-11	SWITCH, SLIDE (• REC)	
S745	1-553-977-51	SWITCH, SLIDE (+ VTR)	
S900	1-571-787-11	SWITCH, TACTILE (TIME CODE WRITE)	

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MISCELLANEOUS
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Ref. No.	Part No.	Description	Remark
11	1-571-373-11	SWITCH, PUSH (ZOOM T/W)	
58	1-503-293-00	SPEAKER	
62	1-520-499-51	METER, LEVEL	
66	1-542-138-11	MICROPHONE ASSY, NARATION	
⚠77	1-450-836-11	TRANSFORMER, DC-DC CONVERTER	
123	8-814-273-00	MICROPHONE, BUILT-IN C-2024	
131	1-575-436-11	WIRE, FLAT TYPE PVC (10 CORE)	
187	1-537-241-61	TERMINAL BOARD (BATTERY)	
213	1-808-505-12	SENSOR (DEW)	
⚠356	1-466-230-21	CONVERTER UNIT, D/D (CAMERA)	
365	1-547-381-12	FILTER BLOCK, OPTICAL	
374	1-547-546-11	LENS, ZOOM (VCL-810XB)	
404	1-575-441-11	CORD, CONNECTION (WITH 8P PLUG)	
⚠409	1-451-357-21	DEFLECTION YOKE	
M901	A-7049-387-A	DRUM ASSY (DGU-70A-R)	
M902	8-835-331-31	MOTOR, DC U-22A (CAPTAN)	
M903	A-7040-160-A	MOTOR ASSY, THREADING (LOADING)	
M904	3-707-816-01	METER ASSY, EE (IRIS)	
M905	3-708-304-01	MOTOR ASSY, PZ GEAR (ZOOM)	
M906	3-707-937-01	MOTOR ASSY, AF GEAR (FOCUS)	
⚠V901	1-546-089-11	CATHODE-RAY TUBE, B/W	
IC101	8-752-606-77	IC ICX039BNA-2 (CCD IMAGER)	

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ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-465-395-11	COMMANDER, REMOTE (RMT-500)	
	1-575-334-21	CORD, CONNECTION	
*	1-575-335-21	CORD, CONNECTION	
	3-704-281-01	BAG, PROTECTION (STANDARD)	
	3-712-595-21	BELT, SHOULDER	
*	3-742-854-01	COVER, BATTERY	
	3-754-875-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-754-875-41	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (AEP)	
	3-754-875-51	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN) (AEP)	
	3-754-875-61	MANUAL, INSTRUCTION (PORTUGUESE) (AEP)	

Ref.No.	Part No.	Description	Remark
	3-754-875-71	MANUAL, INSTRUCTION (DANISH, FINNISH) (AEP)	
	3-754-875-81	MANUAL, INSTRUCTION (ARABIC) (E)	
	3-754-875-91	MANUAL, INSTRUCTION (CHINESE) (E)	
	3-755-120-11	INSTRUCTION	
*	3-947-804-01	INDIVIDUAL CARTON	
*	3-948-044-01	CUSHION (UPPER)	
*	3-948-045-01	CUSHION (LOWER)	
	A-6768-255-A	RFU ADAPTER (RFU-90AS) (Australian)	
	A-6767-706-A	RFU ADAPTER (RFU-89EA) (E)	
	3-712-673-01	SCREWDRIVER (E)	
**	AC-V50	AC POWER ADAPTER	
***	NP-77H	BATTERY PACK	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST

****

#1	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S
#2	7-621-772-40	SCREW +B 2X8
#3	7-621-772-08	SCREW +B 2X3
#4	7-621-255-40	SCREW +BVTT 2X6 (S)
#5	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT
#6	7-621-255-20	SCREW +P 2X4
#7	7-621-773-95	SCREW +B 2.6X6
#8	7-685-205-19	SCREW +KTP 2X8 TYPE2 NON-SLIT
#9	7-671-112-11	BALL, STEEL
#10	7-627-553-37	SCREW (M2X3), SPECIAL HEAD
#11	7-627-555-88	SCREW (M1.4X1.8)
#12	7-621-255-25	SCREW +BVTT 2X4 (S)
#13	7-621-281-15	SCREW +P 2X2
#14	7-632-701-38	TAPE, POLYESTER

SECTION 7
CAMERA ADJUSTMENTS

During the adjustment, see the arrangement diagram for adjustment parts from page 328.

7-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

7-1-1. List of Servicing Jigs

- Oscilloscope
- Adjusting screwdriver
- Regulated power supply (2 units)
- Color monitor
- Vectorscope
- Stop watch
- Digital voltmeter

Ref. No.	Part Name	Part No.	Use
J-1	Filter (C14) for color temperature correction	J-6080-058-A	Auto white balance adjustment/confirmation Outdoor white balance adjustment/confirmation
J-2	ND filter 1.0	J-6080-808-A	Max. gain adjustment
	ND filter 0.4	J-6080-806-A	Iris adjustment
	ND filter 0.9	J-6080-833-A	Max. gain adjustment (two used)
	ND filter 0.1	J-6080-807-A	Iris adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Siemens star chart Transmission type simens-star chart	J-6080-875-A J-6080-923-A	Either of the siemens-star charts which appear during adjustment may be used.
J-6	AF microcomputer data reading jig[*1]	J-6082-025-A	
J-7	Adjustment remote controller[*2]	J-6082-053-B	
J-8	Extension cord (2P 1.5 mm pitch)	J-6082-873-A	To connect FU-70P board W602 and CAMERA DC-DC converter
	Extension cord (5P 1.5 mm pitch)	J-6082-043-A	To connect VC-110P board CN304 and CAMERA DC-DC converter
	Extension cord (4P 1.5 mm pitch)	J-6082-042-A	To connect VC-110P board CN307 and SS-146P board CN801
	Extension cord (2P 1.5 mm pitch)	J-6080-912-A	To connect VI-100 board CN408 and DI-21P board CN601 To connect VI-100 board CN414 and DI-21P board CN602
J-9	Extension cord M (2P 2.0 mm pitch)	J-6080-873-A	To connect VTR DC-DC converter and FU-70P board W602
J-10	Extension cord (12P 1.0 mm pitch)	J-6082-056-A	To connect VC-110P board CN305 and SS-146P board W600
J-11	CPA connector jig	J-6082-109-A	Check point array on the VC-110P board.
J-12	Extension cord (22P 1.0 mm pitch)	J-6082-037-A	To connect FD-45P board CN211 and SS-146P board W227 To connect PC-52 board CN307 and SS-146P board W002
	Extension cord (30P 1.0 mm pitch)	J-6082-108-A	To connect SS-146P board W226 and FD-45P board CN212
J-13	Camera securing jig	J-6080-894-A	

[*1] Change the value of R1 from 10kΩ to 100kΩ in the AF microcomputer data reading jig. (If the value is kept to 10k Ω , the adjustment data can not change because of the difference of the impedance.)
When adjustment the old-model Handy Cam, 100kΩ is allowed to perform the adustment.

[*2] Microcomputer IC in the adjustment Remote controller except for μPD7503G-C56-12 (8-759-148-35) does not allow the page selecting. Replace the microcomputer in such a case.

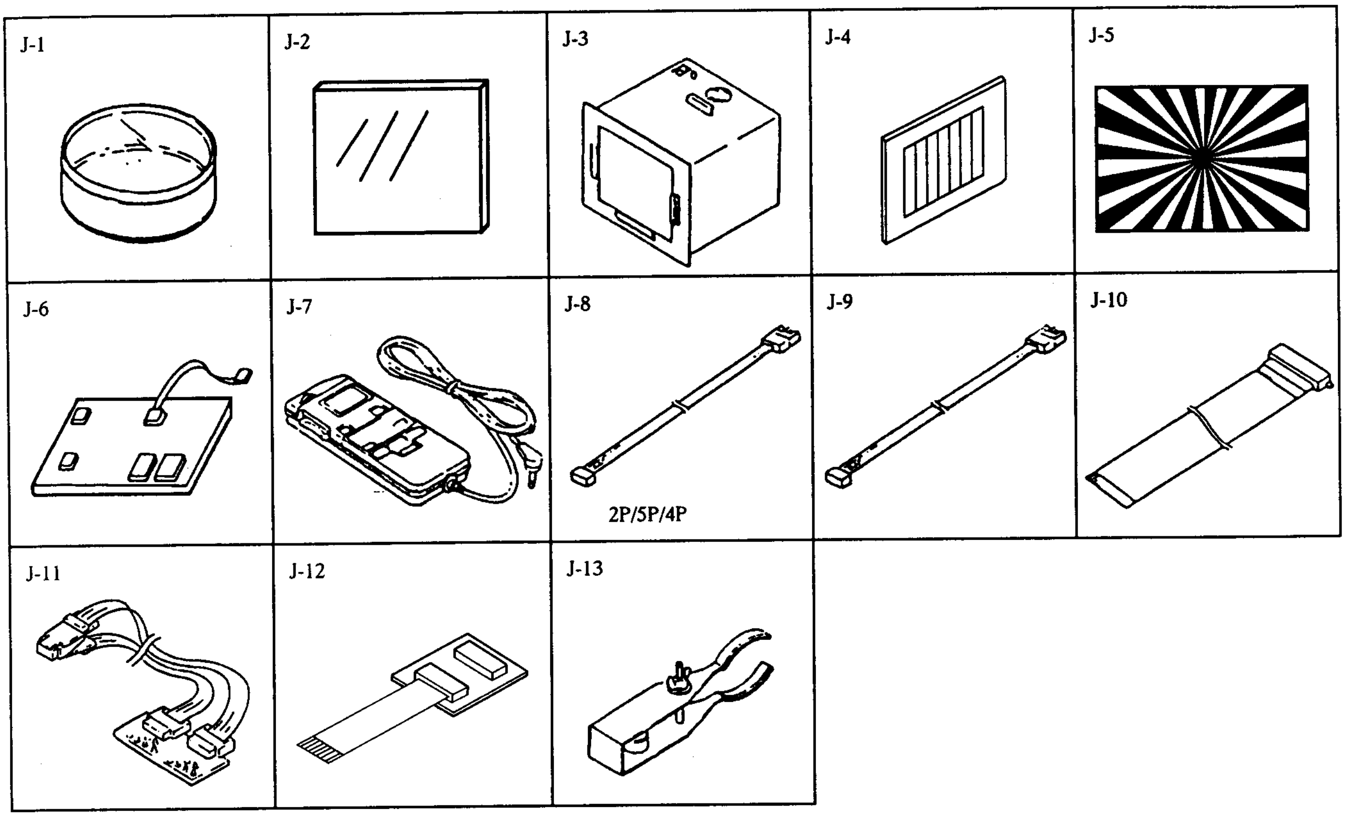

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
2P/5P/4P
J-9
J-10
J-11
J-12
J-13

Fig. 7-1.

7-1-2. Preparations

Note: Refer to "SECTION 2 DISASSEMBLY" for details on removal of the cabinet and various boards.

1) Set up the camera block as shown in Fig. 7-2.
2) Connect the camera and video blocks using extension cables, and the various devices for adjustment as shown in Fig. 7-3.
3) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. This can confirmed on the monitor screen by turning on DATA SCREEN (ON/OFF by S741 on VK-25P board).
4) The left cabinet block is not needed for adjustment except VJ-6P board. If it will be obstacle to the adjustments, remove it by disconnecting the following connectors. (Only VJ-6P board is required for connecting the adjustment remote controller or EVF. Remove the set screw to remove from the cabinet.)
    1. CN861 on the HJ-11P board
    2. CN821 on the SW-113P board
       Note: For camera stand-by states, connect Pins ① and ③ of CN821 with diode (1SS119 or the like). (Pin ① as a cathode, refer to Fig. 7-3.)
       Or connect to the FD-45P board with an external cable.
    3. CN306 on the VC-110P board

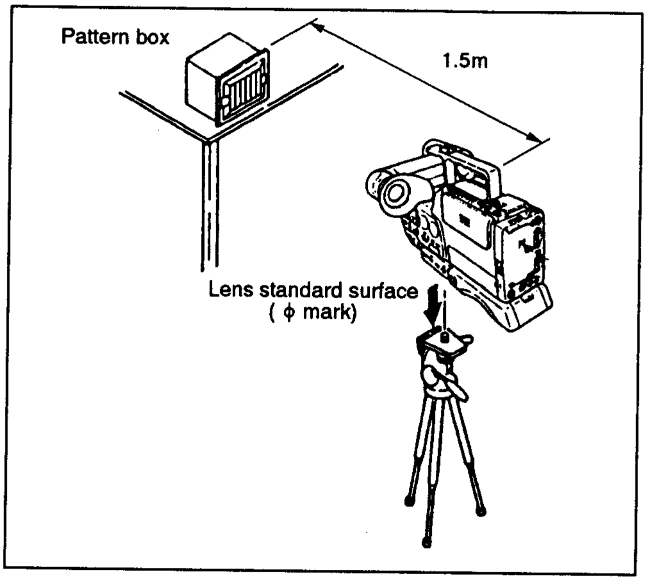
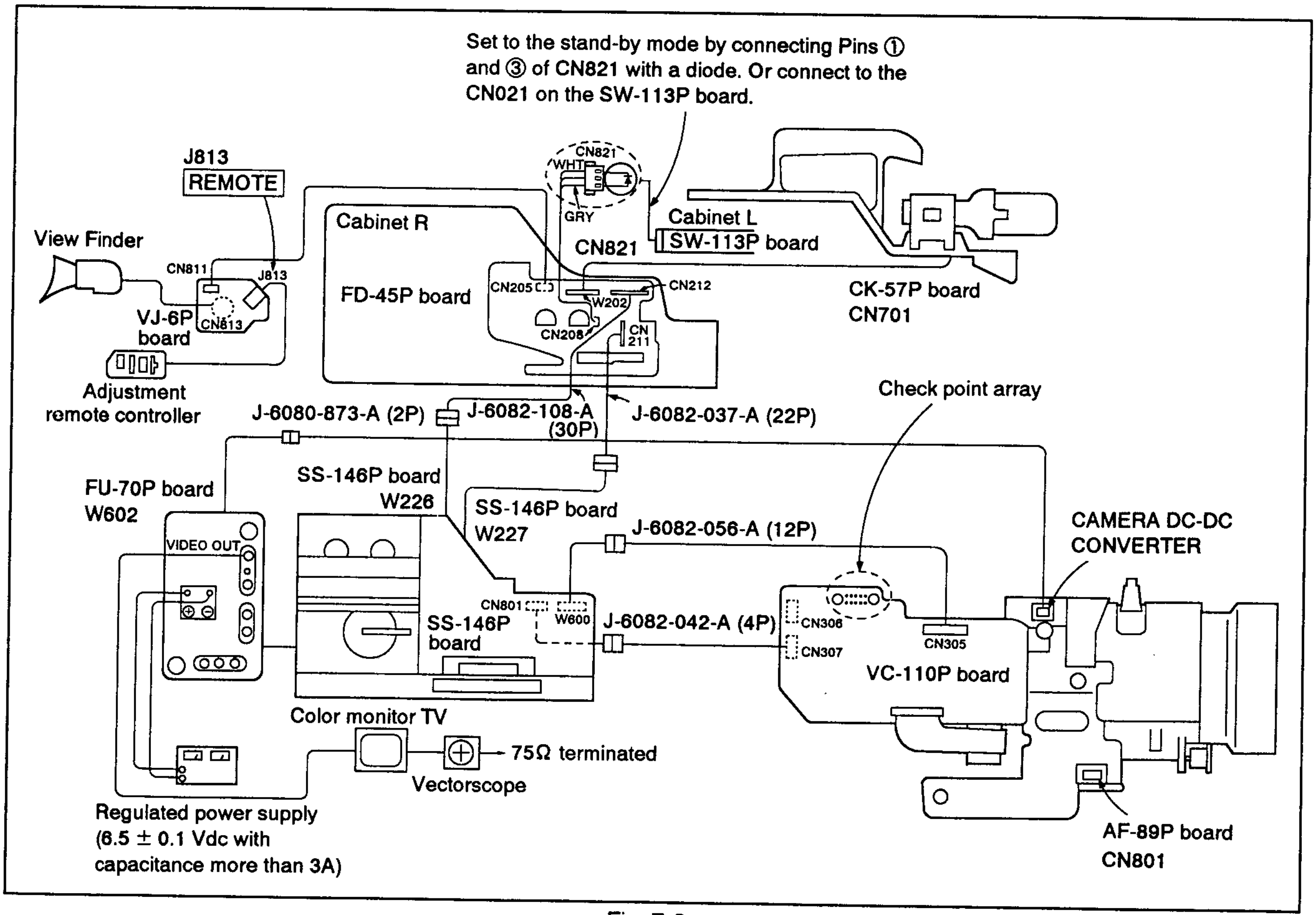

Pattern box
1.5m
Lens standard surface
(ϕ mark)

Fig. 7-2.


Set to the stand-by mode by connecting Pins ① and ③ of CN821 with a diode. Or connect to the CN021 on the SW-113P board.

CN821
WHT
GRY
J813
REMOTE
View Finder
CN811
J813
VJ-6P board
CN813
Adjustment remote controller
Cabinet R
FD-45P board
CN205
W202
CN212
CN208
CN 211
CN821
Cabinet L
SW-113P board
CK-57P board
CN701
Check point array
J-6080-873-A (2P)
J-6082-108-A (30P)
J-6082-037-A (22P)
FU-70P board
W602
VIDEO OUT
SS-146P board
W226
SS-146P board
W227
J-6082-056-A (12P)
CAMERA DC-DC CONVERTER
CN801
W600
SS-146P board
J-6082-042-A (4P)
CN306
CN307
CN305
VC-110P board
Color monitor TV
75Ω terminated
Vectorscope
Regulated power supply
(6.5 ± 0.1 Vdc with capacitance more than 3A)
AF-89P board
CN801

Fig. 7-3.

7-1-3. Precautions

1. Setting of switches

Unless otherwise specified, the switches are set to the following positions and adjustment is made without a cassette inserted.

1. CAMERA /VTR power switch
   (S743 on VK-25P board)··············CAMERA
2. +VTR switch (S745 on VK-25P board)··············ON
3. STANDBY switch (S822 on SW-113P board) ·· STANDBY
4. AUTO LOCK switch (S205 on FD-45P board) ·········· OFF
5. FOCUS switch (S206 on FD-45P board) ··········MANUAL
6. WHITE BALANCE switch (S209 on FD-45P board)
   ··················☼ (indoors)
7. IRIS control (RV201 on FD-45P board) ·· Mechanical center
8. SHUTTER switch (S211 on FD-45P board)
   ·········· NORMAL (1/50)
9. GAIN switch (S208 on FD-45P board)··············NORMAL
10. DIGITAL EFECT switch (S761 on FD-45P board) ····· OFF

2. Adjustment order

As a rule, the adjustments are performed in the listed order.

3. Subjects

1) Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjust the picture frame shown in Fig. 7-4.
   (standard picture frame).
2) White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is in the same position as the color bar chart (standard picture frame).
3) All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (80 mm) side.
4) Siemens star
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.

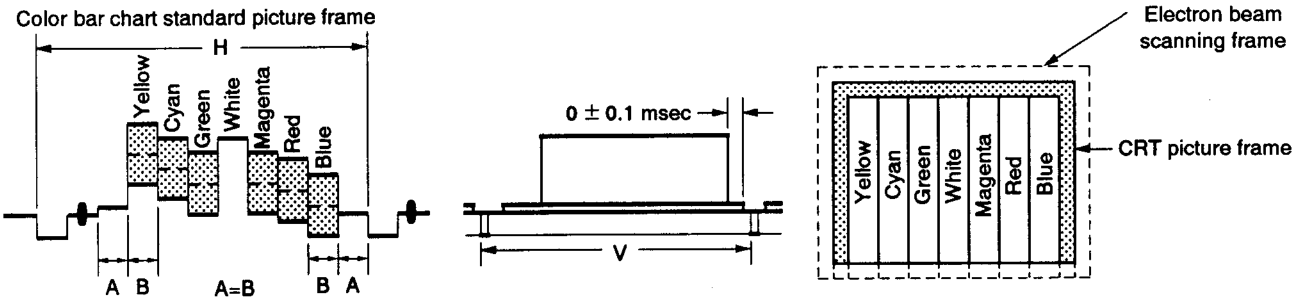

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

7-1-4. Adjustment Remote Controller

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the camera control microcomputer (IC501 on VC-110P board). This microcomputer reads the data written in the nonvolatile memory of the microcomputer and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.

Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.

The adjustment remote controller performs bidirectional communications with the camera control microcomputer using the remote control signal lines (LANC). Adjustment page, adjustment addresses and adjustment data increment/decrement commands are sent to the camera control microcomputer from the adjustment remote controller. Adjustment page, adjustment addresses and adjustment data are sent from the camera control microcomputer to the adjustment remote controller.

Note: The microcomputer IC in the adjustment remote controller except for new microcomputer (UPD7503G-C56-12) dose not allow the adjustment page selecting. Rplace with the new microcomputer (8-759-148-35) in such a case.

1. Use of adjustment remote controller

1) Connect the adjustment remote controller to the remote terminal (J813 on VJ-6P board).
2) Turn on the power of the main unit.
3) Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).)
4) If the connection is correct, the following is displayed on the adjustment remote control LCD.

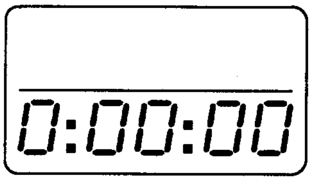


Fig. 7-5.

5) Specify your desired adjustment page by the adjustment remote controller. Presssing the EDIT SEARCH (+) increments the adjustment page. Pressing the EDIT SEARCH (–) decrements it. The adjustment page is shown in the hexadecimal numbers and there are 16 of them from 0 to F. The CAMERA adjustment page is page F and Pressing the EDIT SEARCH (–) button one push. (The adjustment data varies from one set to another.)

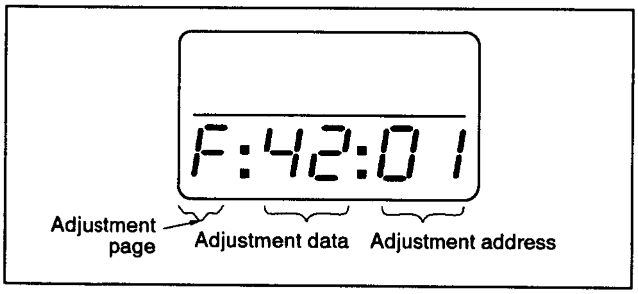


Fig. 7-6.

6) Specify your desired adjustment address by the adjustment remote controller. Pressing the FF (▸▸) button increments the adjustment address, and pressing the REW (◂◂) button decrements it.
   (The adjustment address is shown in the decimal number and there are 256 of them from 00 to FF. The adjustment address corresponds to the output terminal of the EVR (IC301 on the VC-110P board, IC504 on the VC-110P board, and IC004 of the MX-10 board). Refer to Table 7-2 for adjustment of each address.)
7) Perfom adjustment by incrementing or decrementing the adjustment data. The adjustment data is incremented by pressing the PLAY (▶) button. The adjustment data is decremented by pressing the STOP (■) button.
   - The adjustment data is indicated in hexadecimal. There are 256 values from 00 to FF.

Hexadecimal	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Indication	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal equivalent	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Table 7-1.

   - The adjustment data corresponds to the output voltage of the EVR (IC301 on the VC-110P board, IC504 on the VC-110P board, and IC004 on the MX-10 board) as follows:
     MX-10 board IC004:2.0 ↔ 5.0 Vdc
     VC-110P board IC301:0 ↔ 5.0 Vdc
     VC-110P board IC504:1.0 ↔ 3.5 Vdc
8) Change the adjustment address with the FF (▸▸) or REW (◂◂) button in order to store the adjustment data into the non-volatile memory built in the EVR/AWB microcomputer (VC-110P board IC501).
   (If this operation is omitted, new adjustment data will not be stored into the non-volatile memory.)
9) There is a function provided to make note of the last error cuased by the COUNTER RESET button during operation of the set even if the power is turned off. This LAST MEMO EMERGENCY (last error) can be cleared.

7-1-5. Precuations on use of adjustment remote controller

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote controller. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

7-1-6. Adjustment address table (page F)

Note: Data already described in the adjustment data memo column are fixed data.

Adjustment Address	Adjustment Item	Remarks [Adjustment voltage output terminal]	Adjustment Data Memo Column
01	R CONT	[Pin ⑱ of IC004 on MX-10 board] Auto white balance adjustment	
02	B CONT	[Pin ⑲ of IC004 on MX-10 board]	
03	C1 GAIN	[Pin ② of IC004 on MX-10 board] Matrix adjustment (3)	
04	B GAIN	[Pin ③ of IC004 on MX-10 board] Pre-white balance adjustment	
05	R GAIN	[Pin ④ of IC004 on MX-10 board]	
06	Y2 GAIN	[Pin ⑤ of IC004 on MX-10 board] Matrix adjustment (2)	
07	Y1 GAIN	[Pin ⑥ of IC004 on MX-10 board] Matrix adjustment (1)	
08	YH GAIN	[Pin ⑦ of IC004 on MX-10 board] YH Level adjustment	
09	R-Y GAIN	[Pin ⑧ of IC004 on MX-10 board] Color reproduction adjustment	
0A	B-Y GAIN	[Pin ⑨ of IC004 on MX-10 board]	
0B	R-Y HUE	[Pin ⑫ of IC004 on MX-10 board]	
0C	B-Y HUE	[Pin ⑬ of IC004 on MX-10 board]	
0D	SHP LEVEL	[Pin ⑱ of IC301] H aperture adjustment	
0E	Y LEVEL	[Pin ⑲ of IC301] Y level adjustment	
0F	VAP GAIN	[Pin ② of IC301]	90
10	SET UP	[Pin ③ of IC301]	86
11	CHROMA LEVEL	[Pin ④ of IC301] Chrama level adjustment	
12	V SUB CONT	[Pin ⑤ of IC301] V SUB adjustment	
13	PG CONT	[Pin ⑥ of IC301] PG CONT adjustment	
14	Yγ CONT	[Pin ⑦ of IC301]	A0
15	WHITE CLIP	[Pin ⑧ of IC301] White clip adjustment	
16	SYNC LEVEL	[Pin ⑨ of IC301] Sync level adjustment	
17	BURST LEVEL	[Pin ⑫ of IC301] Burst level adjustment	
18	MAX GAIN	[Pin ⑬ of IC301] Max gain adjustment	
19	IRIS REF	[Pin ⑱ of IC504] Iris adjustment	
1A	AGC REF	[Pin ⑲ of IC504] AGC adjustment	
1B	HALL GAIN	[Pin ② of IC504] Hall adjustment	
1C	HALL OFFSET	[Pin ③ of IC504]	
1D	R-Y MIX	[Pin ④ of IC504]	F5
1E	B-Y MIX	[Pin ⑤ of IC504]	A0
1F	FADER CONT	[Pin ⑥ of IC504]	00
20	FOCUS SPEED		
21	ZOOM SPEED		
22	M IRIS CONT		
23	M AGC CONT		
24	AGC IN PULSE		
25	IN-OUT		00
26	M12 THR		30
27	KATAMUKI		04
28	FA-WM		03
29	FA-BM	Auto focus adjustment	
2A	FH-WM		
2B	FH-BM		

Table 7-2. (1)

Adjustment Address	Adjustment Item	Remarks [Adjustment voltage output terminal]	Adjustment Data Memo Column
2C	FA-SMH		
2D	FA-SML		00
2E	FH-SMH		
2F	FH-SML		
30	LOW-F-SPEED	Focus motor speed adjustment	
31	MAN-F-SPEED		22
32	STEP-A		02
33	END-SENS-V		20
34	ZOOM POSI1		38
35	ZOOM POSI2		6D
36	ZOOM POSI3		A2
37	ZOOM POSI4	Macro area adjustment	
38	ZOOM POSI5		F3
39	FOCUS POSI1		48
3A	SEARCH-V		00
3B	BACKRUSH2		02
3C	BACKRUSH-MODE3		05
3D	ZOOM TAN MASK		20
3E	ZOOM-END-V		20
3F	ZOOM-MODOSI		0C
40	BACKRUSH-ZOOM		0F
41	NOT WIDE STOP		00
42	MODE 12NG THR		02
43	FA-BASE-IN		0C
44	FA-BASE-OUT		0C
45	AGC-W	Auto focus adjustment	
46	AGC-B		FF
47	MODE 12NG LIMIT H		02
48	MODE 12NG LIMIT L		00
49	M2-HANTEN		04
4A	MODE 5 THR 1		06
4B	YOGIRI-IN		1E
4C	MODE 5 FH FILT		01
4D	MODE 5 THR 2 IN		05
4E	MODE 5 THR 3		05
4F	FH-NG-COUNT		1E
50	TYUU WAKU		00
51	YOGIRI-OUT		1E
52	MODE 5 THR 2 OUT		05
53	AF IRIS IN OUT		B4
54	MACRO TIME OUT H		00
55	MACRO TIME OUT L		00
56	MACRO SEARCH		00
57	SEISHI		02
58	ZOOM-SPEED1	High speed	40
59	ZOOM-SPEED2	Middle speed (Remote controll)	20

Table 7-2. (2)

Adjustment Address	Adjustment Item	Remarks [Adjustment voltage output terminal]	Adjustment Data Memo Column
5A	ZOOM-SPEED3	Low speed	00
5B	ZOOM-SPEED4	Macro zoom speed	53
5C	TANTEN MODE		00
5D	BACKRUSH-MODE 5		02
5E			
5F			
60	IRISREF NOR	Standard AE level	60
61	IRISREF PO	Portrait AE level	60
62	IRISREF SP	Sports AE level	60
63	IRIS DATA 1	Manual ilis data adjustment	
64	GAIN REF	Manual gain data adjustment	
65	GAIN MAX		E0
66	EMG AGC		A0
67	EMG AGC HYS		05
68	EMG AE (E)		06
69	EMG AE (L)		00
6A	EMG AE HYS (H)		01
6B	MAXSHUT PO (H)	Portrait max shutter speed	00
6C	MAXSHUT PO (L)		CE
6D	MAXSHUT SP (H)	Sports max shutter speed	00
6E	MAXSHUT SP (L)		E6
6F	REF WIDTH (H)	Program AE level hysteresis	01
70	REF WIDTH (L)		00
71	SHUT MULTI (H)		06
72	SHUT MULTI (L)		00
73	SHUT COUNT 1		06
74	SHUTSTEP MULTI		02
75	IRIS OPEN		60
76	REF TURBO (H)		06
77	REF TURBO (L)		00
78	TURBO WIDTH (H)		01
79	TURBO WIDTH (L)		00
7A	TURBO TH (H)		01
7B	TURBO TH (L)		00
7C	SHUT COUNT 2		01
7D	SHUT COUNT 3		01
7E	IRIS CLOSE DATA		FF
7F		Not used	
80	USER R-Y GAIN		10
81	USER B-Y GAIN		0D
82	USER B-Y HUE		0D
83	USER R-Y HUE		0C
84	USER SHP LEVEL		0A
85	USER Y LEVEL		0C
86			

Table 7-2. (3)

Adjustrnent Address	Adjustment Item	Remarks [Adjustment voltage output terminal]		Adjustment Data Memo Column
87		Hall adjustment		
88				
89				
8A				
8B				
8C				
8D				
8E				
8F				
90	R3200 MSB	3200K preset data (red)	Auto white balance preset adjustment	
91	R3200 LSB			
92	B3200 MSB	3200K preset data (blue)		
93	B3200 LSB			
94	G3200 MSB	3200K preset data (green)		
95	G3200 LSB			
96	SHUTTER IN			B1
97	SHUTTER OUT			8B
98	START R	Auto white balance adjustment		
99	START B			
9A	R OUT DOOR			
9B	B OUT DOOR			
9C				
9D				
9E				
9F				
A0	Ra	Auto white balance adjustment		
A1	Rb			
A2	Rc			
A3	Ba			
A4	Bb			
A5	Bc			
A6	R/B TOP			
A7	R/B MDL			
A8	R/B BTM			
A9	B/R TOP			
AA	B/R MDL			
AB	B/R BTM			
AC	BTM SLP R			30
AD	BTM SLP B			70
AE	MDL SLP R			40
AF	MDL SLP B			40
B0	TOP SLP R	Auto white balance adjustment		
B1	TOP SLR B			10
B2	KEIKO R			80
B3	KEIKO B			30
B4	BTM UP			CF

Table 7-2. (4)

Adjustment Address	Adjustment Item	Remarks [Adjustment voltage output terminal]	Adjustment Data Memo Column
B5	BTM DOWN		98
B6	MDL UP		BE
B7	MDL DWN		9B
B8	TOP UP	Auto white balance adjustment	
B9	TOP DWN		
BA	KEIKO		C4
BB	KEIKO DWN		AC
BC	R TOP LMT		A0
BD	R DWN LMT	Auto white balance adjustment	
BE	B TOP LMT		
BF	B IN TOP		
C0	B IN MAX		
C1	B OUT MIN		
C2	B OUT DWN		
C3	B DWN LMT		26
C4	LL LMT		06
C5	TM DIVID		6E
C6	BM DIVID		41
C7	DELAY TM		0A
C8	FAST TM		30
C9	OUT HYS OFF		15
CA	OUT B HYS		0D
CB			
CC			
CD			
CE			
CF			
D0	SYSTEM CONFIGRATION		05
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			
DA			
DB			
DC			
DD			
DE			
DF			
E0	DISPLAY MODE		00
E1			
E2			

Table 7-2. (5)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Item</th><th>Remarks
[Adjustment voltage output terminal]</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>E3</td><td></td><td></td><td></td></tr>
<tr><td>E4</td><td></td><td></td><td></td></tr>
<tr><td>E5</td><td></td><td></td><td></td></tr>
<tr><td>E6</td><td></td><td></td><td></td></tr>
<tr><td>E7</td><td></td><td></td><td></td></tr>
<tr><td>E8</td><td></td><td></td><td></td></tr>
<tr><td>E9</td><td></td><td></td><td></td></tr>
<tr><td>EA</td><td></td><td></td><td></td></tr>
<tr><td>EB</td><td>TEST MODE</td><td>The following test mode is selected by changing adjustment data.
<table>
<tr><th>Adjustment Data</th><th>Test Mode</th><th>Remarks</th></tr>
<tr><td>00</td><td>NORMAL</td><td></td></tr>
<tr><td>01</td><td>F-HANTING</td><td></td></tr>
<tr><td>03</td><td>ZOOM-POSI</td><td>Zoom SENS level</td></tr>
<tr><td>05</td><td>IRIS-POSI</td><td>HALL SENS level</td></tr>
<tr><td>0B</td><td>AGC-CONT</td><td>AGC CONT level</td></tr>
<tr><td>0D</td><td>FOCUS-POSI</td><td>Not used</td></tr>
<tr><td>11</td><td>SHUTTER IN/OUT</td><td>Shutter speed</td></tr>
<tr><td>13</td><td>IRIS LEVEL</td><td>IRIS CONT level</td></tr>
<tr><td>ED</td><td>FILTER-FHM</td><td></td></tr>
<tr><td>EF</td><td>FILTER-FAM</td><td></td></tr>
<tr><td>F1</td><td>FILTER-SFH L</td><td></td></tr>
<tr><td>F3</td><td>FILTER-SFH H</td><td></td></tr>
<tr><td>F5</td><td>FILTER-SFA L</td><td></td></tr>
<tr><td>F7</td><td>FILTER-SFH H</td><td></td></tr>
<tr><td>F9</td><td>FILTER-FA L</td><td></td></tr>
<tr><td>FB</td><td>FILTER-FH L</td><td></td></tr>
<tr><td>FD</td><td>FILTER-FA H</td><td></td></tr>
<tr><td>FF</td><td>FILTER-FH H</td><td></td></tr>
</table></td><td>00</td></tr>
<tr><td>EC</td><td>AWB MODE 3</td><td>The following auto white balance mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment Data</th><th>AWB mode</th></tr>
<tr><td>01</td><td>NORMAL</td></tr>
<tr><td>02</td><td>AUTO WHITE BALANCE CHECK</td></tr>
</table></td><td>01</td></tr>
<tr><td>ED</td><td>AWB MODE 2</td><td></td><td>00</td></tr>
<tr><td>EE</td><td>AWB MODE 1</td><td>The following auto white balance adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment Data</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>AWB MODE 1</td></tr>
<tr><td>10</td><td>WB DIRECT</td></tr>
<tr><td>F0</td><td>WB FREE</td></tr>
<tr><td>01</td><td>3200k Data fetch 1</td></tr>
<tr><td>23</td><td>3200k Data fetch 2</td></tr>
</table></td><td>00</td></tr>
<tr><td>EF</td><td></td><td></td><td>00</td></tr>
<tr><td>F0</td><td></td><td></td><td></td></tr>
<tr><td>F1</td><td></td><td></td><td></td></tr>
<tr><td>F2</td><td></td><td></td><td></td></tr>
<tr><td>F3</td><td></td><td></td><td></td></tr>
<tr><td>F4</td><td></td><td></td><td></td></tr>
<tr><td>F5</td><td></td><td></td><td></td></tr>
<tr><td>F6</td><td></td><td></td><td></td></tr>
</table>

Table 7-2. (6)

Adjustment Address	Adjustment Item	Remarks [Adjustment voltage output terminal]	Adjustment Data Memo Column
F7			
F8			
F9			
FA			
FB			
FC			
FD			
FE			
FF			

Table 7-2. (7)

7-1-7. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the VC-110P board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-3.

Note: The CPA connector jig (J-6082-109-A) allows you to connect an oscilloscope easily.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	N.C	B1	N.C
A2	PG CONT	B2	N.C
A3	N.C	B3	Y LPF OUT
A4	N.C	B4	V SUB
A5	VAP OUT	B5	VAP SLICE
A6	TP	B6	N.C
A7	WB-G	B7	YH GAIN
A8	CAM Y	B8	Y2 GAIN
A9	YH	B9	N.C
A10	CAM C	B10	GND
A11	YH OUT 1	B11	IRIS OUT

* N.C......no connection

Table 7-3.

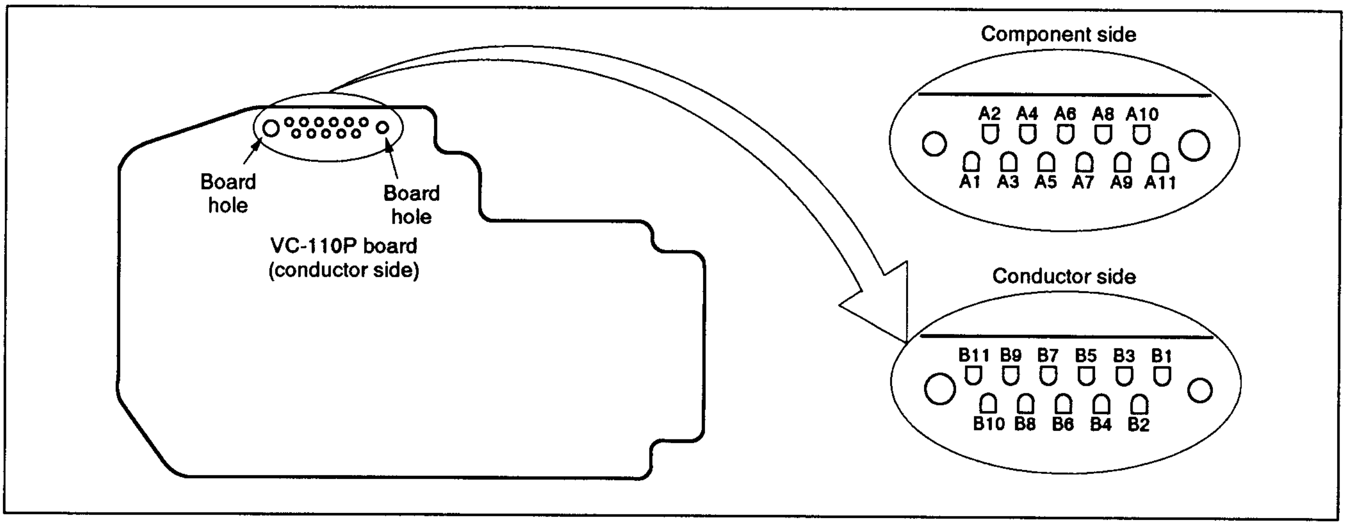

Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Board hole
Board hole
VC-110P board (conductor side)
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-7.

7-1-8. AF Microcomputer Data Reading Jig

The AF microcomputer data reading jig converts the serial data (output data varies according to hall (iris) state, shutter speed, AGC CONT level, IRIS CONT level, etc.) for adjustment output from the camera control microcomputer (IC501 on VC-110P board) into a 2-digit hexadecimal code and displays it on the LED.

Note:

Change the value of R1 from 10kΩ to 100kΩ in the AF microcomputer data reading jig. (If the value is kept to difference of the impedance.)

When adjusting the old-model Handy Cam, 100kΩ is allowed to perform the adjustment.

Connections:

Connect as shown in the diagram below.

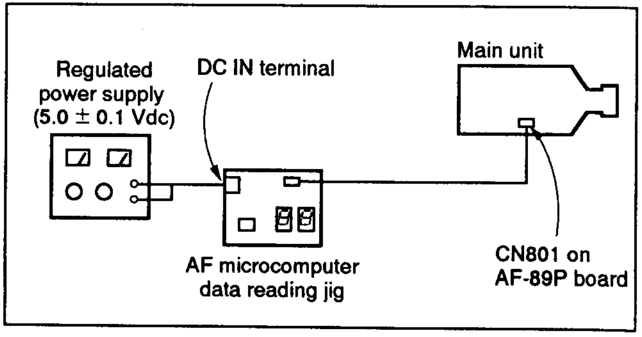

Regulated power supply (5.0 ± 0.1 Vdc)
DC IN terminal
Main unit
AF microcomputer data reading jig
CN801 on AF-89P board

Fig. 7-8.

7-1-9. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microcomputer data reading jig and adjustment remote controller is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal — decimal conversion table is shown in Table 7-4.

Hexadecimal-Decimal Conversion Table

②

Hexadecimal lower digit / Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) is the indication on the jig or adjustment remote commander.

Example: The indication on the jig or adjustment remote commander is BD (b d).
As the upper digit is B (b) and the lower digit is D (d), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-4.

7-2. CAMERA SYSTEM ADJUSTMENTS

- In principle, all adjustments must be made in accordance with Adjustment procedure.
- When replacing lens, do not forget to make the following adjustment.

[Adjustment Sequence]

1) Flange Back Adjustment
2) Auto Focus Adjustment
3) HALL Adjustment
4) IRIS Adjustment

- When replacing CCD imager, do not forget to adjust the camera system property.

7-2-1. Flange Back Adjustment

Subject	Siemens star (2m directly in front of lens reference surface (" ϕ " mark))
Measurement Point	Check with a monitor TV
Measuring Instrument	
Adjusting Element	Flange back adjusting pin
Tools	Phillips screwdriver, slotted screwdriver

Adjusting method:

1) Set FOCUS switch (S206 on FD-45P board) to the MANUAL mode.
2) Position a Siemens star 2 m directly in front of the lens reference plane (See Fig. 7-2.).
3) Adjust the camera block position to match the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its WIDE-end position (8 mm) and TELE-end position (80 mm), and then set it at its WIDE-end position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Adjust IRIS control (RV201 on FD-45P board) to set the lens to full aperture. At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focus index at the center of "2".

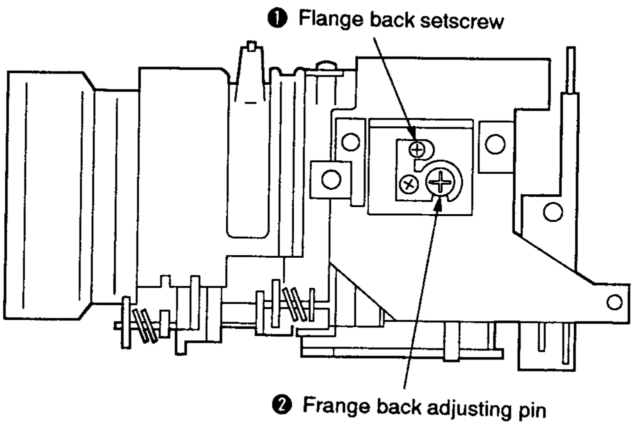


Fig. 7-9.

7) Loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-9.)
8) By turning the flange back adjusting pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few times to the left and right to ensure optimum definition.)
   Note: Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting Pin ❷ to prevent further rotation, tighten the flange back setscrew ❶.
10) With the zoom lever fixed at its WIDE-end position, turn the focus ring and set it to the position that provides the best focus of the wedge. Check to assure the focusing index position is within the range shown in Fig. 7-10. Also, rotate the focus ring to the close (1.3m) and far (∞) extremes and confirm that the wedge is no longer in focus at their position.

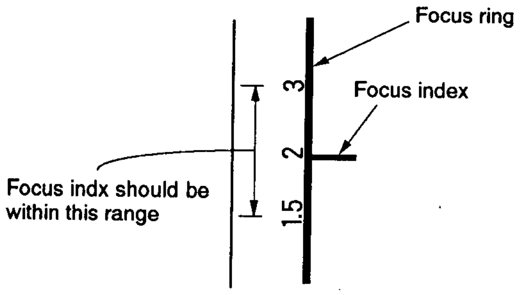


Fig. 7-10.

11) Fix the zoom lever at its TELE-end position.
12) Turn the focus ring and stop at the position that provides the best focus of the wedge.
    Confirm that the focus index is within ± 1.5 mm of center of "2".

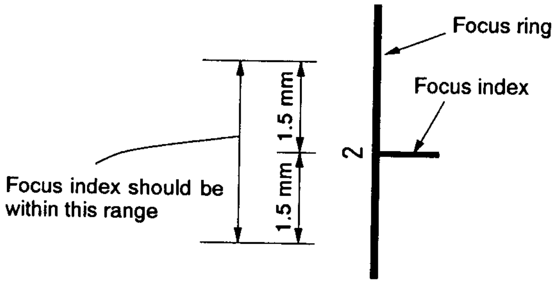


Fig. 7-11.

7-2-2. CAMERA DC-DC converter Check (VC-110P, CD-82P Board)

Measuring Instrument	Digital voltmeter
CAM 4.9V Check	
Measurement Point	Pin ④ of CN304 on VC-110P board
Specified Value	4.9 ± 0.1 Vdc
4.9V Check	
Measurement Point	Pin ③ of CN101 on CD-82P board
Specified Value	4.9 ± 0.1 Vdc
15V Check	
Measurement Point	Pin ① of CN101 on CD-82P board
Specified Value	15.0 ± 0.2 Vdc
–9V Check	
Measurement Point	Pin ② of CN101 on CD-82P board
Specified Value	–9.00 ± 0.15 Vdc

Checking method:

1) Confirm that each voltage meet the specified value.

7-2-3. EVR Initial Settings

Set to the following initial settings of the adjustment data when the CAMERA microcomputer or the CCD IMAGER was replaced.

Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value
0E (Y LEVEL)	9C	4A (MODE 5 THR 1)	06	79 (TURBO WIDTH-L)	00
0F (VAP GAIN)	90	4B (YOGIRI IN)	1E	7A (TURBO TR-H)	01
10 (SET UP)	86	4C (MODE 5 FH FLT)	01	7B (TURBO TR-L)	00
12 (V SUB CONT)	3A	4D (MODE 5 THR 2 IN)	05	7C (SHUT COUNT 2)	01
13 (PG CONT)	5A	4E (MODE 5 THR 3)	05	7D (SHUT COUNT 3)	01
14 (Y γ CONT)	A0	4F (FH NG COUNT)	1E	7E (IRIS CLOSE DATA)	FF
15 (WHITE CLIP)	FF	50 (TYUUWAKU)	00	80 (USER R-Y GAIN)	10
18 (MAX GAIN)	B0	51 (YOGIRI OUT)	1E	81 (USER B-Y GAIN)	0D
19 (IRIS REF)	4C	52 (MODE 5 THR 2 OUT)	05	82 (USER B-Y HUE)	0D
1B (HALL GAIN)	20	53 (AF IRIS IN OUT)	B4	83 (USER R-Y HUE)	0C
1C (HALL OFFSET)	00	54 (MACRO TIME OUT H)	00	84 (USER SHP LEVEL)	0A
1D (R-Y MIX)	F5	55 (MACRO TIME OUT L)	00	85 (USER Y LEVEL)	0C
1E (B-Y MIX)	A0	56 (MACRO SEARCH)	00	96 (SHUTTER IN)	B1
1F (FADER CONT)	00	57 (SEISHI)	02	97 (SHUTTER OUT)	8B
25 (IN OUT)	00	58 (ZOOM-SPEED1)	40	AC (BTM SLP R)	30
26 (M12 THR)	30	59 (ZOOM-SPEED2)	20	AD (BTM SLP B)	70
27 (KATAMUKI)	04	5A (ZOOM-SPEED3)	00	AE (MDL SLP R)	40
28 (FA WM)	03	5B (ZOOM-SPEED4)	53	AF (MDL SLP B)	40
2D (FA SML)	00	5C (TANTEN MODE)	00	B1 (TOP SLP B)	10
2F (FH SML)	00	5D (BACK-RUSH MODE 5)	02	B2 (KEIKO R)	80
30 (LOW F SPEED)	34	60 (IRISREF NOR)	60	B3 (KEIKO B)	30
31 (MAIN F SPEED)	22	61 (IRISREF PO)	60	B4 (BTM UP)	CF
32 (STEP A)	02	62 (IRISREF SP)	60	B5 (BTM DOWN)	98
33 (END SENS V)	20	63 (IRIS DATA 1)	B6	B6 (MDL UP)	BE
34 (ZOOM POSI 1)	38	64 (GAIN REF)	30	B7 (MDL DWN)	9B
35 (ZOOM POSI 2)	6D	65 (GAIN MAX)	E0	BA (KEIKO)	C4
36 (ZOOM POSI 3)	A2	66 (EMG AGC)	A0	BB (KEIKO DWN)	AC
37 (ZOOM POSI 4)	DA	67 (EMG AGC HYS)	05	BC (R TOP LMT)	A0
38 (ZOOM POSI 5)	F3	68 (EMG AE-H)	06	C3 (B DWN LMT)	26
39 (FOCUS POSI 1)	48	69 (EMG AE-L)	00	C4 (LL LMT)	06
3A (SEARCH V)	00	6A (EMG AE HYS-H)	01	C5 (TM DIVID)	6E
3B (BACKRUSH 2)	02	6B (MAXSHUT PO (H))	00	C6 (BM DIVID)	41
3C (BACKRUSH MODE 2)	05	6C (MAXSHUT PO (L))	CE	C7 (DELAY TM)	0A
3D (ZOOM TAN MASK)	20	6D (MAXSHUT SP (H))	00	C8 (FAST TM)	30
3E (ZOOM END V)	20	6E (MAXSHUT SP (L))	E6	C9 (OUT HYS OFF)	15
3F (ZOOM MODOSI)	0C	6F (REF WIDTH-H)	01	CA (OUT B HYS)	0D
40 (BACKRUSH ZOOM)	0F	70 (REF WIDTH-L)	00	D0 (SYSTEM)	05
41 (NOTWIDE STOP)	00	71 (SHUT MULTI-H)	06	E0 (DISPLAY MODE)	00
42 (MODE 12 NG THR)	02	72 (SHUT MULTI-L)	00	EB (MODE)	00
43 (FA BASE H IN)	0C	73 (SHUT CONT 1)	06	EC (AWB MODE3)	01
44 (FA BASE OUT)	0C	74 (SHUTSTEP MULTI)	02	ED (AWB MODE2)	00
46 (AGC B)	FF	75 (IRIS OPEN)	60	EE (AWB MODE1)	00
47 (MODE 12 NG LIMIT H)	02	76 (REF TURBO-H)	06	EF (CAM ALON)	00
48 (MODE 12 NG LIMIT L)	00	77 (REF TURBO-L)	00		
49 (M2 HANTEN)	04	78 (TURBO WIDTH-H)	01		

Table 7-5.

Adjusting method:

1) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote controller.
2) Change the adjustment address to store the last adjustment data in the memory.

7-2-4. Prime Oscilation Adjustment (CD-82P Board)

Measurement Point	Pin ③ of DT-77 board
Measuring Instrument	Frequency counter
Adjusting Elemtnt	CT122
Specified Value	14187500 ± 71 Hz

Note: Connect the frequency counter through a buffer amplifier (Oscilloscope, etc.) having high impedance and low capacitance.

Preparation:
1) Remove CD-82P board from the lens block.

Adjusting method:
1) Adjust to 14187500 ± 71 Hz with CT122.

7-2-5. PLL Adjustment (CD-82P Board)

Measurement Point	Pin ⑳ of IC121
Measuring Instrument	Digital voltmeter
Adjusting Elemtnt	CT121
Specified Value	2.5 ± 0.2 Vdc

Preparation:
1) Remove CD-82P board from the lens block.

Adjusting method:
1) Adjust to 2.5 ± 0.2 Vdc with CT121.

7-2-6. PG CONT and VSUB Adjustment

1. PG CONT adjustment (VC-110P board)

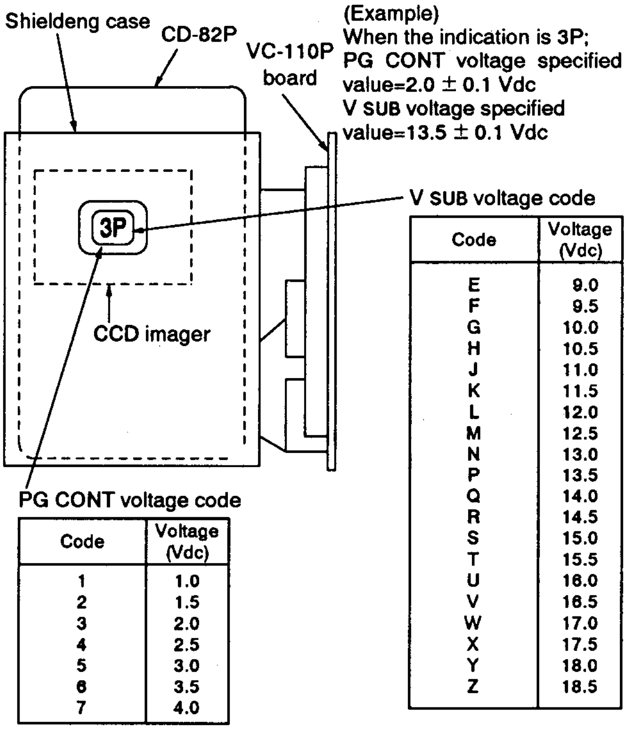
Subject	Not needed
Measurement Point	Pin (A2) (PG CONT) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	13 (PG CONT)
Specified Value	(Voltage indicated by the imager) ± 0.1 Vdc

Adjusting method:
1) Select the page F and the address 13 with the adjustment remote controller.
2) Change the adjustment data to set the PG CONT voltage to (voltage indicated by the imager) ± 0.1 Vdc.
3) Change the adjustment address to store the adjustment data in the memory.

2. VSUB adjustment (VC-110P board)

Subject	Not needed
Measurement Point	Pin (B4) (V SUB) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	12 (V SUB)
Specified Value	(Voltage indicated by the imager) Vdc ± 3 %

Adjusting method:
1) Change the adjustment data at page F address 12 using the adjustment remote controller to set the VSUB voltage to (voltage indicated by the imager) Vdc ± 3 %.
2) Change the adjustment address to store the adjustment data in the memory.



(Example)
When the indication is 3P;
PG CONT voltage specified value=2.0 ± 0.1 Vdc
V SUB voltage specified value=13.5 ± 0.1 Vdc

PG CONT voltage code

Code	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

V SUB voltage code

Code	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 7-12.

7-2-7. Iris Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin(B11) (IRIS OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	19 (Iris)
Specified Value	150 ± 10 mV

Adjusting method:

1) Confirm that the IRIS knob is at the AUTO position.
2) Select the adjustment page F and the adjustment address 19.
3) Without attaching an ND filter, change the adjustment data with the adjustment remote controller to set the IRIS OUT signal level to 150 ± 10 mV.
4) Attach the ND filter 0.5 (0.4+0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
5) Remove the ND filter and confirm that the signal level is 150 ± 20 mV.
6) Repeat 3) through 5) if the specified value is not met.
7) Change the adjustment address to store the adjustment data in the memory.

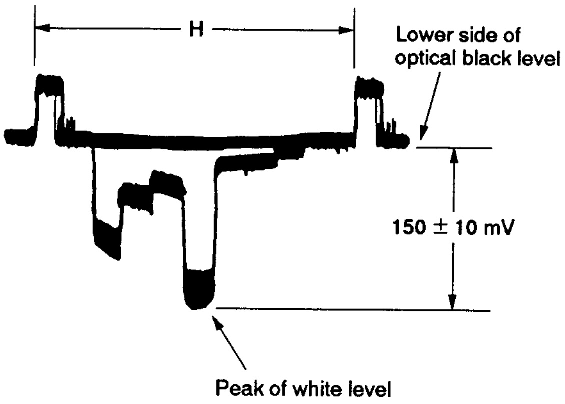


Fig. 7-13.

7-2-8. HALL Adjustment (AF-89P Board)

1. HALL Adjustment 1

Subject	White pattern standard picture frame
Measurement Point	CN801
Measuring Instrument	AF microcomputer data reading jig
Adjustment Page	F
Adjustment Address	87, 8B, 8A

Adjusting method:

1) Select the adjustment page F with the adjustment remote controller.
2) Select the adjustment address EB and set the adjustment data to 05. (HALL SENS level indication mode setting.)
   Select the adjustment address 1B and set the adjustment data to 20.
   Select the adjustment address 1C and set the adjustment data to 00.
3) Read the data indicated on the AF microcomputer data reading jig.
4) When the indicated data is over E8.
   1) Select the adjustment address 1C and change the adjustment data until the indication of AF microcomputer data reading jig is E8 ± 3.
   2) Read the data of adjustment address 1C, and enter adjustment address 87.

   When the indicated data is below E8.
   1) Select adjustment address 87 and set the adjustment data to 00.
5) Read the data (W_2) indicated on the AF microcomputer data reading jig, and enter adjustment address 8B.
6) Select adjustment address 1B and set the adjustment data to 00.
7) Read the data (W_1) indicated on the AF microproccssor data reading jig and enter adjustment address 8A.
8) Perform "HALL adjustment 2".

2. HALL Adjustment 2

Subject	All black (cover lens with black cap)
Measurement Point	CN801
Measuring Instrument	AF microcomputer data reading jig.
Adjustment Page	F
Adjustment Address	88, 89, 1B (HALL GAIN), 1C (HALL OFFSET)

Note: Perform “HALL adjustment 1” before this adjustment.

Adjusting method:

1) Read the data (K_1) indicated on the AF microcomputer data reading jig, and enter adjustment address 88.
2) Select adjustment address 1B and set the adjustment data to 20.
3) Read the data (K_2) indicated on the AF microcomputer data reading jig, and enter adjustment address 89.
4) Convert the adjustment data W_1 (address 8A) to decimal to obtain W_1', the adjustment data W_2 (address 8B) to decimal to obtain W_2', the adjustment data K_1 to decimal to obtain K_1', and the adjustment data K_2 to decimal to obtain K_2'. (See Table 7-4, Hexadecimal-decimal conversion table)
5) Obtain D′ by the following formula.

$$D' = \frac{(187+K_1'-W_1')\times \Delta K'+72\times \Delta W'}{\Delta K'+\Delta W'}$$

$$\left(\begin{array}{l}\Delta K'=K_1'-K_2' \\ \Delta W'=W_2'-W_1'\end{array}\right)$$

6) Convert D′ to hexadecimal and obtain D. (when converting, if there is a fraction under decimal, round it off.)
7) Select the adjustment address 1B and set the adjustment data to 00.
8) Select the adjustment address 1C, and change the adjustment data until the indication of AF microcomputer data reading jig is D ± 1.
9) Select the adjustment address 1B, and change the adjustment data until the indication of AF microcomputer data reading jig is 48.
10) Perform “HALL adjustment 3”.

3. HALL Adjustment 3

Subject	White pattern stndard picture frame
Measurement Point	CN801
Measuring Instrument	AF microcomputer data reading jig.
Adjustment Page	F
Adjustment Address	1B (HALL GAIN), IC (HALL OFFSET)

Note: Perform “HALL adjustment 2” before this adjustment.

Adjusting method:

1) Read the data (Wo) indicated on the AF microcomputer data reading jig.
2) When Wo value is from B9 to BC, peform the adjustmnt after 15).
3) convert Wo to decimal to obtain Wo′.
4) Obtain E′ by the following formulla.

$$E' = \frac{(187\times \Delta K')+(Wo'\times \Delta W')}{\Delta K'+\Delta W'}$$

$$\left(\begin{array}{l}\Delta K'=K_1'-K_2' \\ \Delta W'=W_2'-W_1'\end{array}\right)$$

5) Convert E′ to hexadecimal and obtain E.
6) Select the adjustment address 1C, and change the adjustment data until the indication of AF microcomputer data reading jig is E ± 1.
7) When E value is equal to BB, perform the adjustment after 9).
8) Select the adjustment address 1B and change the adjustment data until the indication of AF microcomputer data reading jig is BB.
9) Cover the lens with black cap.
10) Read the data (Ko) indicated on the AF microcomputer data reading jig.
11) When Ko Value is from 46 to 4A, perform the adjustment after 15).
12) Select the adjustment adress 1B and change the adjustment data until the indication of AF microcomputer data reading jig is 48.
13) Remove the black cap.
14) Comfirm that the indication of AF microcomputer data reading jig is from B9 to BC.
15) Select the adjustment address EB and set the adjustment data to 00.
16) Change the adjustment address to store the adjustment data in the memory.

7-2-9. AGC Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B3) (Y LPF OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	1A (AGC)
Specified Value	180 ± 5 mV

Adjusting method:

1) Select the adjustment page F and the adjustment address 1A.
2) Change the adjustment data with the adjustment remote controller to set the Y LPF signal level to 180 ± 5 mV.
3) Change the adjustment address to store the adjustment data in the memory.

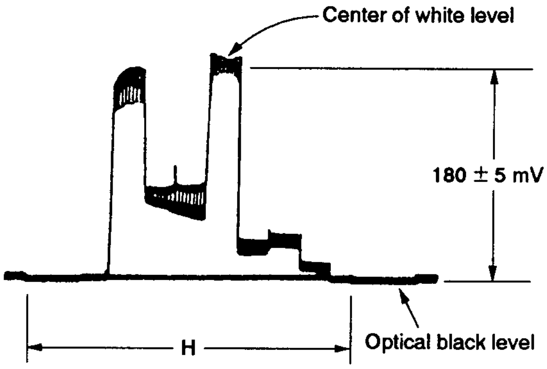


Fig. 7-14.

7-2-10. Manual Gain Data Adjustment (AF-89P Board)

Subject	Color bar chart standard picture frame
Measurement Point	CN801
Measuring Instrument	AF microcomputer data reading jig
Adjustment Page	F
Adjustment Address	64 (GAIN REF)

Adjusting method:

1) Set data OB to page F, address EB with the adjustment remote controller, and change the address.
   (AGC CONT level display mode setting)
2) Select page F, address 64.
3) Read the display data of the AF microcomputer data reading jig, and enter as the adjustment data.
4) Select page F, address EB, and enter data 00.
   (AGC CONT display mode release)
5) Change the adjustment address to store the adjustment data in the memory.

7-2-11. Matrix Adjustment (VC-110P Board)

1. Y_1 Gain Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A5) (VAP OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (Y_1 Gain)
Specified Value	Y_0–Y_1=0 ± 5 mV

Preparation:

1) Connect Pin (B8) (Y_2 GAIN) of check point array and GND with a jumper wire.
2) Connect Pin (B5) (VAP SLICE) of check point array and GND with a jumper wire.

Adjusting Method:

1) Select the adjustment page F with the adjustment remote controller.
2) Select the adjustment address 0F with the adjustment remote controller and set the adjustment data to 00.
   (VAP GAIN: MAX)
3) Select the adjustment address 07.
4) Change the adjustment data and set the Y_0–Y_1 waveform to be a straight line. (There should not be difference.)
5) Change the adjustment address to store the adjustment data in the memory.
6) Remove the jumper wires.
7) Perform "Y_2 Gain adjustment."

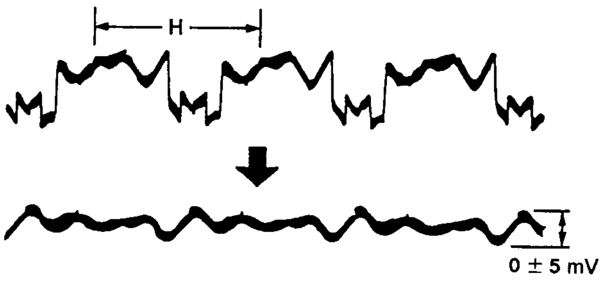


Fig. 7-15.

2. Y_2 Gain Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A5) (VAP OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (Y_2 GAIN)
Specified Value	$Y_1 - \frac{Y_0+Y_2}{2} = 0 \pm 5$ mV

Preparation:

1) Connect pin (B5) (VAP SLICE) of check point array and GND with a jumper wire.

Adjusting Method:

1) Select the adjustment page F with the adjustment remote controller.
2) Select the adjustment address 0F with the adjustment remote controller and set the adjustment data to 00.
   (VAP GAIN: MAX)
3) Select the adjustment address 06.
4) Change the adjustment data and set the ($Y_1 - \frac{Y_0+Y_2}{2}$) waveform to be a straight line. (There should not be difference.)
5) Select the adjustment address 0F with the adjustment remote controller and set the adjustment data to 90.
6) Change the adjustment address to store the adjustment data in the memory.
7) Remove the jumper wire.

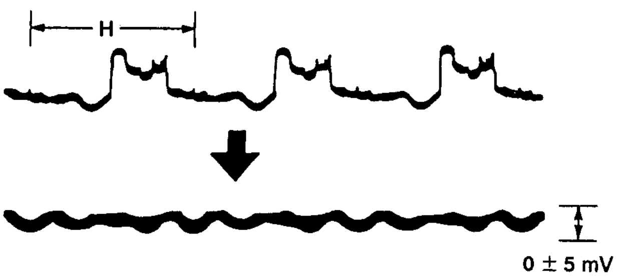


Fig. 7-16.

7-2-12. Y_H Level Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A6) (TP) of check point array
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	08 (Y_H GAIN)
Specified Value	0 ± 5 mV

Adjusting Method:

1) Select the adjustment page F and the adjustment address 08.
2) Change the adjustment data with the adjustment remote controller and set the waveform to be straght line. (There should not be difference)
3) Change the adjustment address to store the adjustment data in the memory.

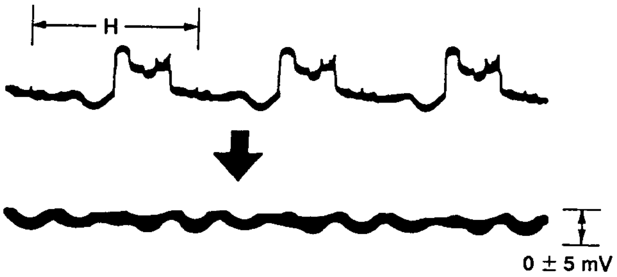


Fig. 7-17.

7-2-13. C1 Gain Adjustment (VC-110P Board)

Subject	Color bar standard picture frame
Measurement Point	CH1(X): Pin ① of IC402 (B–Y) CH2(Y): Pin ② of IC402 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)[Note 1]
Adjustment Page	F
Adjustment Address	03 (C1 GAIN)
Specified Value	Separate color luminance points become one.

Note: 1) Adjustment can be made in the same manner using a vectorscope. Connect to the video out terminal when the vectorscope used.

Adjusting method:

1) Select the adjustment page F and the adjustment address 03.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

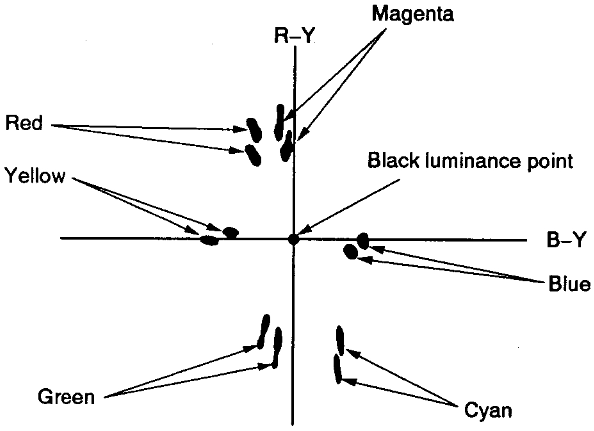


Fig. 7-18.

7-2-14. Sync Level Adjustment (VC-110P Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (A8) (CAM Y) of check point array or pin ① (Y OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	16 (SYNC LEVEL)
Specified Value	150 ± 5 mVp-p

Adjusting method:

1) Select the adjustment page F and the adjustment address 16 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the sync level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

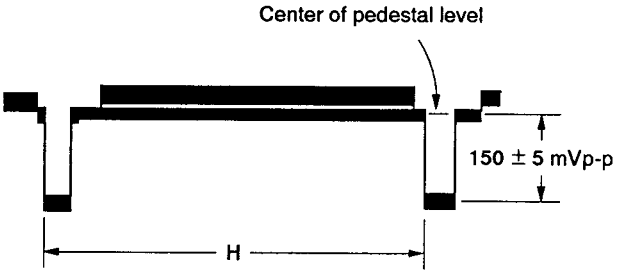


Fig. 7-19.

7-2-15. Manual Iris Data Adjustment (AF-89P Board)

Subject	White pattern standard picture frame
Measurement Point	CN801
Measuring Instrument	AF microcomputer data reading jig
Adjustment Page	F
Adjustment Address	63 (IRIS DATA 1)
Specified Value	BB+1

Adjusting method:

1) Set data 05 to page F, address EB with the adjustment remote controller, and change the address.
   (HALL-SENS level display mode setting)
2) Cover the lens with a black cap.
3) Rotate the IRIS knob, and adjust the iris to “F9.6”. (Check with the viewfinder or data screen display.)
4) Remove the black cap.
5) Select page F, address 63 with the adjustment remote controller.
6) Change the adjustment data, and adjust the AF microcomputer data reading jig display to BB ± 1.
7) Select page F, address EB, and enter data 00.
   (HALL SENS level display mode release)
8) Change the adjustment address to store the adjustment data in the memory.
9) Set the IRIS knob back to the AUTO position (center click position).

7-2-16. Setup Confirmation (VC-110P Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (A8)(CAM Y) of check point array or pin ① (Y OUT) of CN307
Measuring Instrument	Oscilloscope
Specified Value	5^{+10}_{-5} mV

Note: 1) and 2) are steps taken to reduce noise.

Checking method:

1) Select the adjustment page F and the address 0D (SHP LEVEL) with the adjustment remote controller, and enter FF as the adjustment data after making a note of the adjustment data for this address.
2) Set the address 18 (MAX GAIN) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Confirm that the setup level is 5^{+10}_{-5} mV.
4) Set the adjustment address to 0D and enter the adjustment data recorded in 1).
5) Set the adjustment address to 18 and enter the adjustment data recorded in 2).
6) Change the adjustment address to store the adjustment data in the memory.

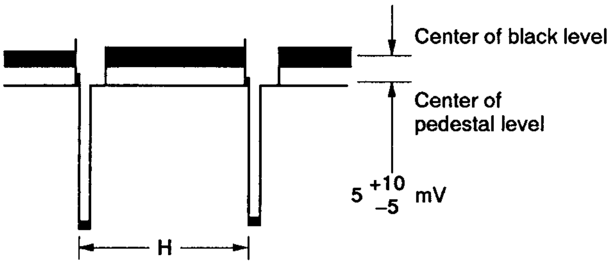


Fig. 7-20.

7-2-17. White Clip Adjustment (VC-110P Board)

Subject	Color var chart standard picture frame
Measurement Point	Pin (A8) (CAM Y) of check point array or pin ① (Y OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	15 (WHITE CLIP)
Specified Value	420 ± 10 mV

Adjusting method:

1) Select the adjustment page F and the adjustment address 0E with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote controller. (Y level is maximum.)
3) Set the adjustment address to 15 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the white clip level to 420 ± 10 mV.
5) Set the adjustment address to 0E and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

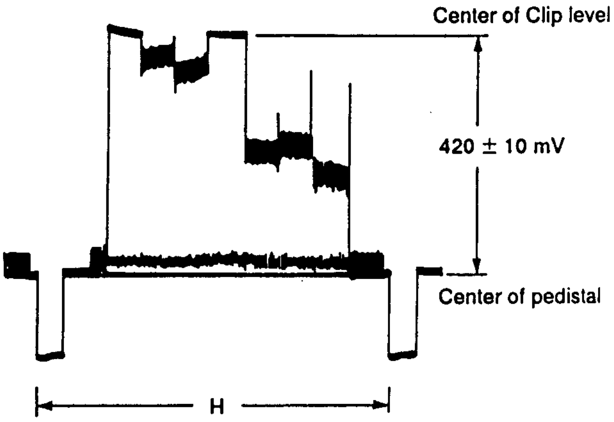


Fig. 7-21.

7-2-18. Y Level Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A8) (CAM Y) of check point array or pin ① (Y OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	0E (Y LEVEL)
Specified Value	330 ± 5 mV

Adjusting method:

1) Select the adjustment page F and the adjustment address 0E.
2) Change the adjustment data with the adjustment remote controller to set the Y signal level to 330 ± 5 mV.
3) Change the adjustment address to store the adjustment data in the memory.

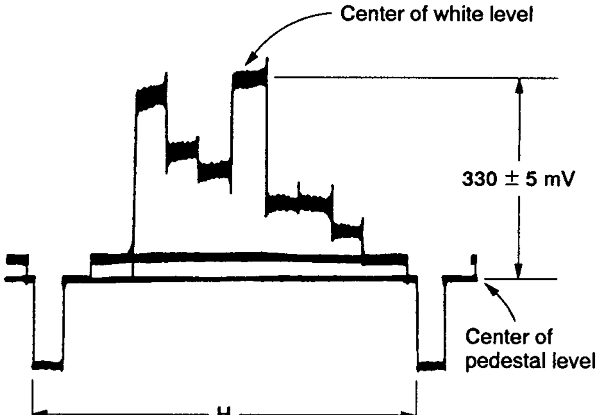


Fig. 7-22.

7-2-19. Max. Gain Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (one) and 0.9 (two)
Measurement Point	Pin (A8)(CAM Y) of check point array or pin ① (Y OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	18 (MAX GAIN)
Specified Value	115 ± 5 mV

Adjusting method:

1) Cover the lens with the ND filter 2.8 (1.0+0.9+0.9).
2) Select the adjustment page F and the adjustment address 18 with the adjustment remote controller.
3) Change the adjustment data with the adjustment remote controller to set the Y signal level to 115 ± 5 mV.
4) Change the adjustment address to store the adjustment data in the memory.

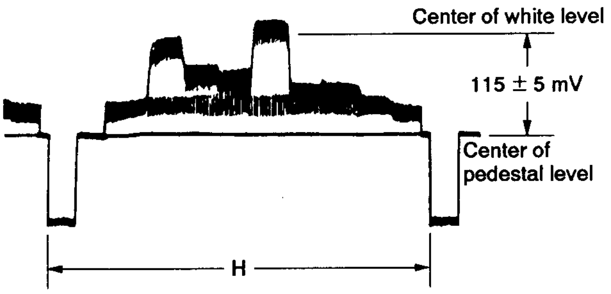


Fig. 7-23.

7-2-20. H Aperture Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin ① (Y OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	0D (SHP LEVEL)
Specified Value	40 ± 5 mV

Adjusting method:

1) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
2) Select the adjustment page F and the adjustment address 0D.
3) Change the adjustment data to set the lower peak between green and white to 40 ± 5 mV.
(The adjustment data should be 8A to 9F.)
4) Change the adjustment address to store the adjustment data in the memory.

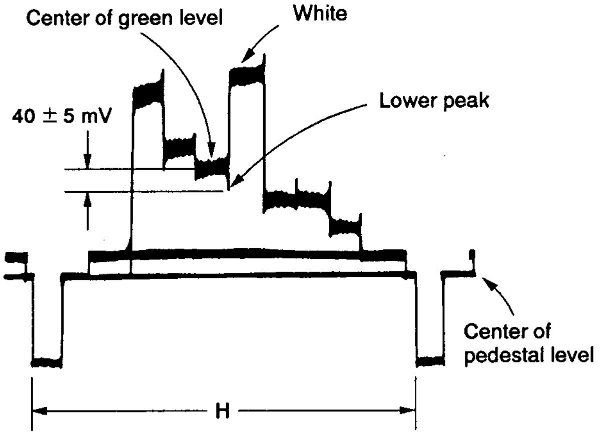


Fig. 7-24.

7-2-21. Chroma Level Adjustment (VC-110P Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓐ7 (WB-G) of check point array
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	11 (C LEVEL)
Specified Value	320 ± 20 mV

Adjusting method:

1) Select the adjustment page F and the adjustment address 11.
2) Change the adjustment data with the adjustment remote controller to set the WB-G signal level to 320 ± 20 mV.
3) Change the adjustment address to store the adjustment data in the memory.

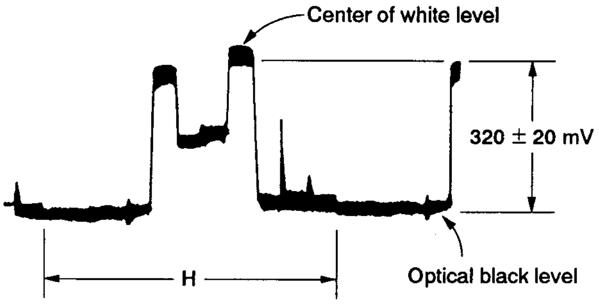


Fig. 7-25.

7-2-22. Burst Level Adjustment (VC-110P Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin Ⓐ10 (CAM C) of check point array or pin ③ (C OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	17 (BURST LEVEL)
Specified Value	150 ± 5 mVp-p

Adjusting method:

1) Select the adjustment page F and the adjustment address 17 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the burst level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

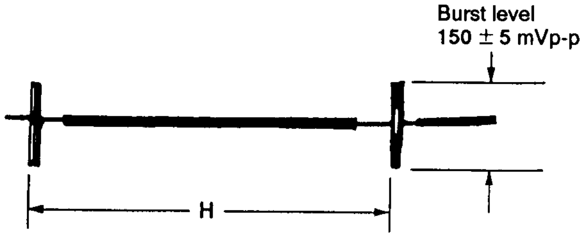


Fig. 7-26.

7-2-23. Burst Phase Check

Subject	All black (cover lens with black cap)
Measurement Point	VIDEO output terminal
Measuring Instrument	Vectorscope
Specified Value	135° ± 2°

Checking method:

1) Confirm that the burst luminance point phase is 135° ± 2°.

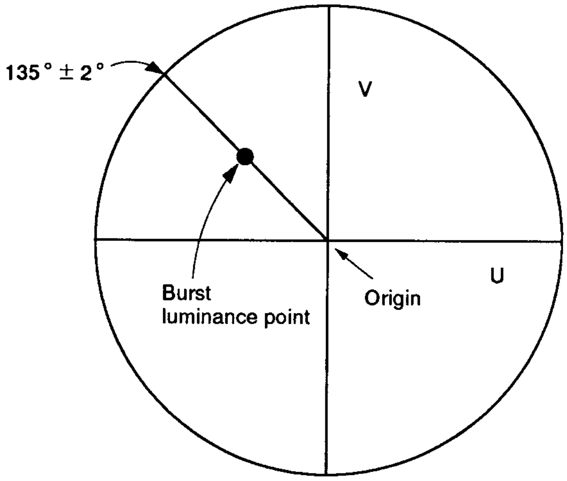


Fig. 7-27.

7-2-24. Pre- White Balance Adjustment (Method Using Vectorscope)

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	05 (R GAIN) 04 (B GAIN)
Specified Value	The center of the white luminance point is within a circle with a diameter of 1 mm centered around the origin.

Adjusting method:

1) Select the adjustment page F and the adjustment address 05 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to match the white luminance point with the origin.
3) Set the adjustment address to 04.
4) Change the adjustment data to match the white luminance point with the origin.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

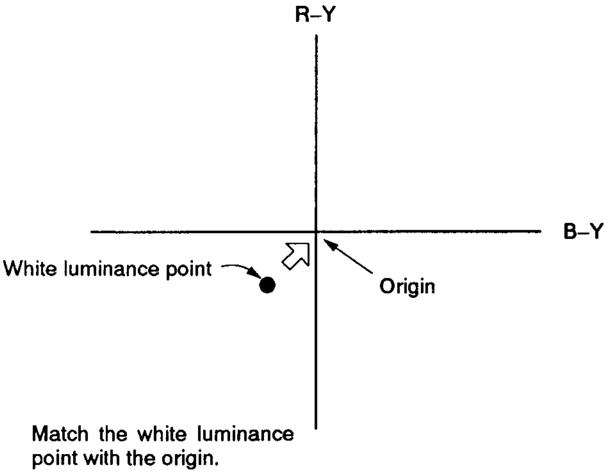


Fig. 7-28.

7-2-25. Pre- White Balance Adjustment (Method Using Oscilloscope) (VC-110P Board)

Subject	White pattern standard picture frame
Measurement Point	Pin (A10) (CAM C) of check point array or pin ③ (C OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	05 (R GAIN) 04 (B GAIN)
Specified Value	Minimum chroma signal amplitude.

Adjusting method:

1) Select the adjustment page F and the adjustment address to 05 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to minimize the chroma signal amplitude.
3) Set the adjustment address to 04.
4) Change the adjustment data to minimize the croma signal amplitude.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

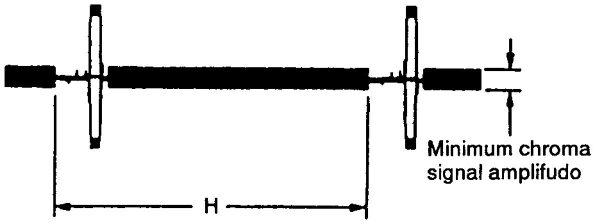


Fig. 7-29.

7-2-26. Color Reproduction Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	09 (R–Y GAIN), 0A (B–Y GAIN), 0B (R–Y HUE), 0C (B–Y HUE)
Specified Value	All color luminance points are within color reproduction frame. (⊞)

Note: Confirm that "Burst Level Adjustment" and "Pre- White Balance Adjustment" have been completed.

Adjusting method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Select the adjustment page F.
3) Change the adjustment data at the various adjustment addresses using the adjustment remote controller until all color luminance points are within the color reproduction frame (⊞).
4) Change the adjustment address to store the adjustment data in the memory.

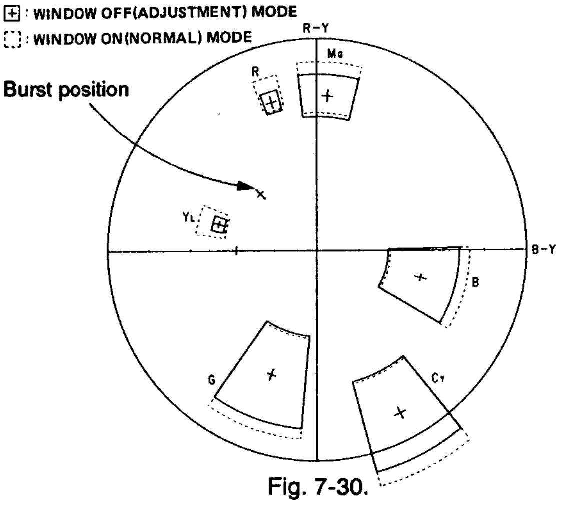


Fig. 7-30.

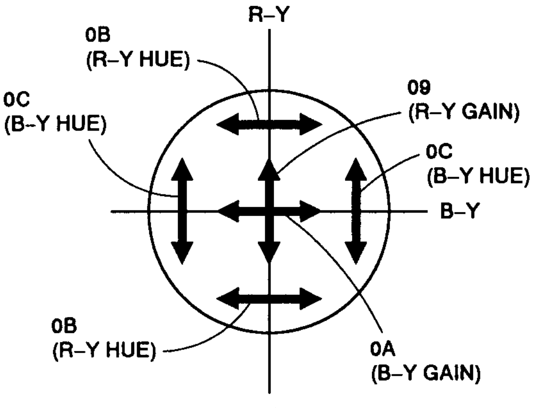


Fig. 7-31. Adjustment address and direction of luminance point movement

7-2-27. Color Reproduction Adjustment (Method Using Oscilloscope)

1. Gain adjustment (VC-110P board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A10) (CAM C) of check point array or pin ③ (C OUT) of CN307
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	09 (R–Y GAIN) 0A (B–Y GAIN)
Specified Value	Red level: 291 ± 20 mVp-p Yellow level: 191 ± 12 mVp-p

Note: Confirm that "Indoor White Balance Adjustment" is completed.

Adjusting method:

1) Select the adjustment page F with the adjustment remote controller.
2) Set the adjustment address to 0A with the adjustment remote controller and set the adjustment data to 70.
3) Set the adjustment address to 0B and set the adjustment data to 70.
4) Set the adjustment address to 0C and set the adjustment data to 60.
5) Set the adjustment address to 09 and change the adjustment data to set the chroma signal "red" level to 291 ± 20 mVp-p.
6) Set the adjustment address to 0A and change the adjustment data to set the chroma signal "yellow" level to 191 ± 12 mVp-p.
7) Repeat steps 5) and 6).
8) Change the adjustment address to store the adjustment data in the memory.
9) Perform "Hue Adjustment".

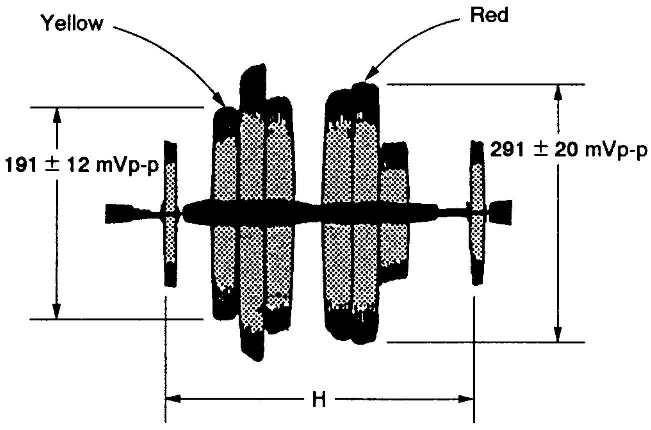


Fig. 7-32.

2. Hue adjustment (VC-110P board)

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): Pin ① of IC402 (B–Y) CH2 (Y): Pin ② of IC402 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Page	F
Adjustment Address	0B (R–Y HUE) 0C (B–Y HUE)
Specified Value	Various color luminance points within color reproduction frame.

Note: Make sure that "Indoor White Balance Adjustment" is completed.

Adjusting method:

1) Match the "black" luminance point on the oscilloscope with the origin of the color reproduction frame.
2) Select the adjustment page F with the adjustment remote controller.
3) Change the adjustment data at adjustment addresses 0B and 0C with the adjustment remote controller to bring the various color luminance points into the color reproduction frame.
4) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 0B and 0C if necessary.
5) Set the oscilloscope to the normal mode and connect it to Pin ③ of CN307 and confirm that the specified value of "1. Gain Adjustment" is satisfied. Change the data at the adjustment address 09 and 0A if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

WINDOW OFF (ADJUSTMENT) MODE

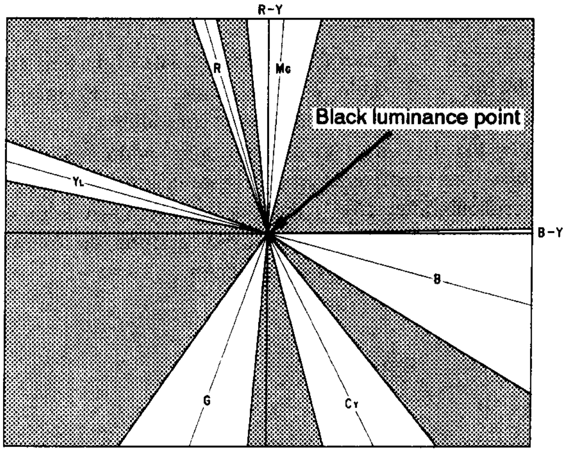


Fig. 7-33.

7-2-28. Auto White Balance Adjustment

Note: Be sure to first perform "Preset Adjustment" followed by "Auto White Balance Adjustment".

1. Preset adjustment (VC-110P board)

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	90 (R3200 MSB), 91 (R3200 LSB) 92 (B3200 MSB), 93 (B3200 LSB) 94 (G3200 MSB), 95 (G3200 LSB)

Adjusting method:

1) Turn the power OFF and ON.
2) Turn off the auto focus with FOCUS button, and wait at least for 5 seconds.
3) Select the adjustment page F and the adjustment address EE and set the adjustment data to 01. (3200k data fetch 1 mode setting)
4) Change the adjustment address to store 3200k data 1.
5) Select the adjustment address EE and set the adjustment data to 23. (3200K data fetch 2 mode setting)
6) Change the adjustment address to store 3200k data 2.
7) Confirm that the indicated data on the adjustment remote controller is changed, and that the indicated address is 95.
8) Select the adjustment address EE and set the adjustment data to 00.
9) Change the adjustment address.
10) Perform the following "Auto white balance adjustment".

2. Auto white balance adjustment (VC-110P board)

Note: Be sure to perform "Preset adjustment" before this adjustment".

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measuring Instrument	Vectorscope or oscilloscope (X-Y Mode)
Measurement Point	• When using vectorscope video output terminal • When using oscilloscope CH1 (X): Pin ① of IC402 (B-Y) CH2 (Y): Pin ② of IC402 (R-Y)
Adjustment Page	F
Adjustment Address	01 (R CONT) 02 (B CONT) 98 (START R) 99 (START B) 9A (R OUT DOOR) 9B (B OUT DOOR) A0 (Ra) A1 (Rb) A2 (Rc) A3 (Ba) A4 (Bb) A5 (Bc) A6 (R/B TOP) A7 (R/B MDL) A8 (R/B BTM) A9 (B/R TOP) AA (B/R MDL) AB (B/R BTM) B0 (TOP SLP R) B8 (TOP UP) B9 (TOP DWN) BD (R DWN LMT) BE (B DWN LMT) BF (B IN TOP) C0 (B IN MAX) C1 (B OUT MIN) C2 (B OUT DWN)
Specified Value	Line up the white luminance point with the origin (or the black luminance point)

Note: All calculations in this section are made in decimal.

Adjusting method:

1) Select the adjustment address EE and set the adjustment data to 10 with the adjustment remote controller.
   (WB DIRECT mode setting)
2) Cover the lans with C14 filter.
3) Change the adjustment data at the adjustment addresses 01 and 02 alternately with the adjustment remote controller to match the white luminance point with the origin (when using vectorscope) or black luminance point (when using oscilloscope).
   The adjustment data of adjustment address 01 will be C1 and the adjustment data of adjustment address 02 will be C2.

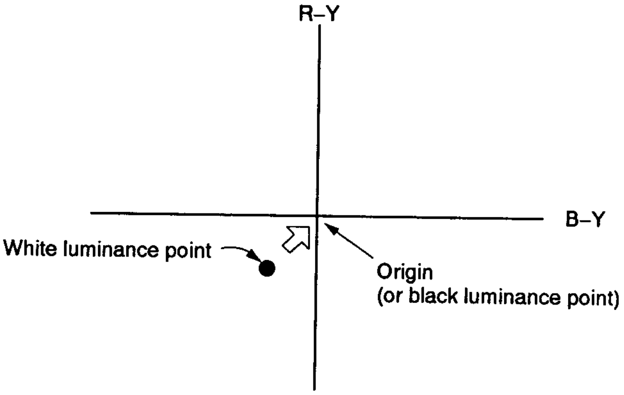


Fig. 7-34.

- Adjustment data input with the tables

4) When C1 value is from 37 through 41, obtain the adjustment data at the adjustment addresses 98, 9A, A0, A1, A2 and BD by Table 7-6., and enter the data into each address with the adjustment remote controller.
5) When C2 value is from 6F through 7C, obtain the adjustment data at the adjustment addresses 99, 9B, A3, A4, A5, BE, BF, C0, C1 and C2 with Table 7-7., and enter the data into each address with the adjustment remote controller.
6) When C1 value is from 37 through 41 and C2 value is from 6F through 7C, obtain the adjustment data of the adjustment addresses with Table 7-8., and enter the data into each address with the adjustment remote controller.
7) When the data input to all adjustment addresses with the Tables has completed in 4) through 6), perform the adjustments after 16). If there is the adjustment address in which the data input is impossible, perform the following "Adjustment data input by calculation".

- Adjustment data input by calculation

8) Convert the adjustment data C1 to decimal to obtain C1′, and the adjustment data C2 to decimal to obtain C2′.
(See Table 7-4. Hexadecimal – decimal conversion table)

9) Obtain D9A′ and D9B′ by the following formula.
D9A′=C1′+2
D9B′=C2′+6

10) Convert D9A′ to hexadecimal and enter it into the adjustment address 9A and address A1.

11) Convert D9B′ to hexadecimal and enter it into the adjustment address 9B and address A4 and address BF.

12) Obtain A′ and B′ by the following formula.
A′=90–D9A′
B′=D9B′–80

13) Obtain the adjustment data (decimal) by the following formula, convert to hexadecimal and enter the data into each adjustment address. (When converting, if there is a fraction under decimal, round it off.) Still, take down each adjustment data (decimal).
Address A0 DA0′=90–A′×1.12
Address A2 DA2′=90–A′×0.593
Address 98 D98′=DA2′
Address A3 DA3′=B′×1.34+80
Address A5 DA5′=B′×0.467+80
Address 99 D99′=DA5′
Address BD DBD′=90–A′×1.67
Address BE DBE′=B′×2+80
Address C0 DC0′=B′×0.84+80
Address C1 DC1′=DC0′
Address C2 DC2′=B′×0.3+80

14) Obtain the adjustment data (decimal) by the following formula, convert to hexadecimal and enter the data into each adjustment address. (Round fractions off.) Still, take down each adjustment data (decimal).
Address A6 DA6′=((DA1′–DA0′)×64)÷(DA3′–DA4′)
Address A7 DA7′=((DA2′–DA1′)×64)÷(DA4′–DA5′)
Address A8 DA8′=((90–DA2′)×64)÷(DA5′–80)
Address A9 DA9′=((DA3′–DA4′)×16)÷(DA1′–DA0′)
Address AA DAA′=((DA4′–DA5′)×16)÷(DA2′–DA1′)
Address AB DAB′=((DA5′–80)×16)÷(90–DA2′)
Address B0 DB0′=DA9′

15) Obtain the adjustment data (decimal) by the following formula, convert to hexadecimal and enter the data into each adjustment address. (Round fractions off.)
Note: When DA1′ and DA4′ have a fractions under decimal, round it off.
Address B8 DB8′=((DA1′+10)×DA9′+(DA4′×16)) ÷ 64
Address B9 DB9′=((DA1′–17)×DA9′+(DA4′×16)) ÷ 64

- Processing after completing adjustments

16) Select the adjustment address EE and set the adjustment data to 00.

17) Change the adjustment address to store the adjustment data in the memory.

18) Set HOLD switch of the adjustment remote controller to the off position and then set to the on position.

(Example)

It C1 is 39, the Ⓐ line is the required adjustment data.

C1	ADJUSTMENT ADDRESS						
	98	9A	A0	A1	A2	BD	
37	46	39	35	39	46	23	
38	47	3A	36	3A	47	25	
39	48	3B	37	3B	48	26	Ⓐ
3A	48	3C	38	3C	48	28	
3B	49	3D	3A	3D	49	2A	
3C	49	3E	3B	3E	49	2B	
3D	4A	3F	3C	3F	4A	2D	
3E	4B	40	3D	40	4B	2F	
3F	4B	41	3E	41	4B	30	
40	4C	42	3F	42	4C	32	
41	4C	43	40	43	4C	34	

Table 7-6.

C2	ADJUSTMENT ADDRESS									
	99	9B	A3	A4	A5	BE	BF	C0	C1	C2
6F	61	75	82	75	61	9A	75	6F	6F	5B
70	62	76	83	76	62	9C	76	70	70	5B
71	62	77	84	77	62	9E	77	71	71	5C
72	63	78	86	78	63	A0	78	72	72	5C
73	63	79	87	79	63	A2	79	72	72	5C
74	64	7A	88	7A	64	A4	7A	73	73	5D
75	64	7B	8A	7B	64	A6	7B	74	74	5D
76	65	7C	8B	7C	65	A8	7C	75	75	5D
77	65	7D	8C	7D	65	AA	7D	76	76	5E
78	65	7E	8E	7E	65	AC	7E	77	77	5E
79	66	7F	8F	7F	66	AE	7F	77	77	5E
7A	66	80	90	80	66	B0	80	78	78	5E
7B	67	81	92	81	67	B2	81	79	79	5F
7C	67	82	93	82	67	B4	82	7A	7A	5F

Table 7-7.

		ADJUSTMENT ADDRESS											ADJUSTMENT ADDRESS								
C1	C2	A6	A7	A8	A9	AA	AB	B0	B8	B9	C1	C2	A6	A7	A8	A9	AA	AB	B0	B8	B9
37	6F	14	2A	4B	34	19	0E	34	54	3E	3A	6F	14	26	44	34	1B	0F	34	56	40
37	70	14	2A	47	34	19	0E	34	54	3E	3A	70	14	26	40	34	1B	10	34	56	40
37	71	14	28	47	34	1A	0E	34	54	3E	3A	71	14	25	40	34	1C	10	34	57	41
37	72	12	28	43	38	1A	0F	38	59	41	3A	72	12	25	3D	38	1C	11	38	5B	44
37	73	12	26	43	38	1B	0F	38	59	41	3A	73	12	23	3D	38	1D	11	38	5C	44
37	74	12	26	40	38	1B	10	38	59	42	3A	74	12	23	3A	38	1D	12	38	5C	44
37	75	11	24	40	3C	1C	10	3C	5E	44	3A	75	11	21	3A	3C	1F	12	3C	60	47
37	76	11	24	3D	3C	1C	11	3C	5E	45	3A	76	11	21	37	3C	1F	13	3C	61	47
37	77	11	23	3D	3C	1E	11	3C	5E	45	3A	77	11	20	37	3C	20	13	3C	61	48
37	78	10	21	3D	40	1F	11	40	63	48	3A	78	10	1F	37	40	21	13	40	66	4B
37	79	10	21	3A	40	1F	12	40	63	48	3A	79	10	1F	34	40	21	14	40	66	4B
37	7A	10	20	3A	40	20	12	40	63	48	3A	7A	10	1E	34	40	23	14	40	66	4B
37	7B	0F	20	38	44	20	12	44	67	4B	3A	7B	0F	1E	32	44	23	14	44	6B	4E
37	7C	0F	1F	38	44	21	12	44	68	4B	3A	7C	0F	1C	32	44	24	14	44	6B	4E
38	6F	14	2A	48	34	19	0E	34	55	3F	3B	6F	0F	26	40	45	1B	10	45	6A	4D
38	70	14	2A	44	34	19	0F	34	55	3F	3B	70	0F	26	3C	45	1B	11	45	6A	4D
38	71	14	28	44	34	1A	0F	34	55	3F	3B	71	0F	25	3C	45	1C	11	45	6B	4D
38	72	12	28	40	38	1A	10	38	5A	42	3B	72	0E	25	39	4B	1C	12	4B	71	51
38	73	12	26	40	38	1B	10	38	5A	42	3B	73	0E	23	39	4B	1D	12	4B	71	52
38	74	12	26	3D	38	1B	11	38	5A	42	3B	74	0E	23	36	4B	1D	13	4B	71	52
38	75	11	24	3D	3C	1C	11	3C	5F	45	3B	75	0D	21	36	50	1F	13	50	78	56
38	76	11	24	3A	3C	1C	12	3C	5F	45	3B	76	0D	21	34	50	1F	14	50	78	56
38	77	11	23	3A	3C	1E	12	3C	5F	46	3B	77	0D	20	34	50	20	14	50	78	56
38	78	10	21	3A	40	1F	12	40	64	49	3B	78	0C	1F	34	55	21	14	55	7E	5A
38	79	10	21	37	40	1F	13	40	64	49	3B	79	0C	1F	31	55	21	15	55	7E	5A
38	7A	10	20	37	40	20	13	40	64	49	3B	7A	0C	1E	31	55	23	15	55	7F	5B
38	7B	0F	20	35	44	20	13	44	69	4C	3B	7B	0B	1E	2F	5B	23	16	5B	85	5F
38	7C	0F	1F	35	44	21	13	44	69	4C	3B	7C	0B	1C	2F	5B	24	16	5B	85	5F
39	6F	14	2A	44	34	19	0F	34	55	3F	3C	6F	0F	23	40	45	1D	10	45	6B	4E
39	70	14	2A	40	34	19	10	34	56	40	3C	70	0F	23	3C	45	1D	11	45	6C	4E
39	71	14	28	40	34	1A	10	34	56	40	3C	71	0F	22	3C	45	1F	11	45	6C	4F
39	72	12	28	3D	38	1A	11	38	5A	43	3C	72	0E	22	39	4B	1F	12	4B	72	53
39	73	12	26	3D	38	1B	11	38	5B	43	3C	73	0E	20	39	4B	20	12	4B	72	53
39	74	12	26	3A	38	1B	12	38	5B	43	3C	74	0E	20	36	4B	20	13	4B	73	53
39	75	11	24	3A	3C	1C	12	3C	5F	46	3C	75	0D	1F	36	50	21	13	50	79	57
39	76	11	24	37	3C	1C	13	3C	60	46	3C	76	0D	1F	34	50	21	14	50	79	57
39	77	11	23	37	3C	1E	13	3C	60	47	3C	77	0D	1D	34	50	23	14	50	79	58
39	78	10	21	37	40	1F	13	40	65	4A	3C	78	0C	1C	34	55	24	14	55	80	5C
39	79	10	21	34	40	1F	14	40	65	4A	3C	79	0C	1C	31	55	24	15	55	80	5C
39	7A	10	20	34	40	20	14	40	65	4A	3C	7A	0C	1B	31	55	26	15	55	80	5C
39	7B	0F	20	32	44	20	14	44	6A	4D	3C	7B	0B	1B	2F	5B	26	16	5B	86	60
39	7C	0F	1F	32	44	21	14	44	6A	4D	3C	7C	0B	1A	2F	5B	27	16	5B	87	60

Table 7-8. (1)

		ADJUSTMENT ADRESS								
C1	C2	A6	A7	A8	A9	AA	AB	B0	B8	B9
3D	6F	0F	23	3C	45	1D	11	45	6C	4F
3D	70	0F	23	39	45	1D	12	45	6D	4F
3D	71	0F	22	39	45	1F	12	45	6D	50
3D	72	0E	22	36	4B	1F	13	4B	73	54
3D	73	0E	20	36	4B	20	13	4B	73	54
3D	74	0E	20	33	4B	20	14	4B	74	54
3D	75	0D	1F	33	50	21	14	50	7A	58
3D	76	0D	1F	31	50	21	15	50	7A	59
3D	77	0D	1D	31	50	23	15	50	7B	59
3D	78	0C	1C	31	55	24	15	55	81	5D
3D	79	0C	1C	2F	55	24	16	55	81	5D
3D	7A	0C	1B	2F	55	26	16	55	81	5D
3D	7B	0B	1B	2D	5B	26	17	5B	88	61
3D	7C	0B	1A	2D	5B	27	17	5B	88	62
3E	6F	0F	23	38	45	1D	12	45	6D	50
3E	70	0F	23	35	45	1D	13	45	6E	50
3E	71	0F	22	35	45	1F	13	45	6E	51
3E	72	0E	22	33	4B	1F	14	4B	74	55
3E	73	0E	20	33	4B	20	14	4B	75	55
3E	74	0E	20	30	4B	20	15	4B	75	55
3E	75	0D	1F	30	50	21	15	50	7B	5A
3E	76	0D	1F	2E	50	21	16	50	7C	5A
3E	77	0D	1D	2E	50	23	16	50	7C	5A
3E	78	0C	1C	2E	55	24	16	55	82	5E
3E	79	0C	1C	2C	55	24	17	55	82	5E
3E	7A	0C	1B	2C	55	26	17	55	83	5F
3E	7B	0B	1B	2A	5B	26	19	5B	89	63
3E	7C	0B	1A	2A	5B	27	19	5B	89	63
3F	6F	0F	20	38	45	20	12	45	6F	51
3F	70	0F	20	35	45	20	13	45	6F	52
3F	71	0F	1E	35	45	22	13	45	6F	52
3F	72	0E	1E	33	4B	22	14	4B	76	56
3F	73	0E	1D	33	4B	23	14	4B	76	56
3F	74	0E	1D	30	4B	23	15	4B	76	57
3F	75	0D	1C	30	50	25	15	50	7D	5B
3F	76	0D	1C	2E	50	25	16	50	7D	5B
3F	77	0D	1B	2E	50	26	16	50	7D	5B
3F	78	0C	1A	2E	55	28	16	55	84	60
3F	79	0C	1A	2C	55	28	17	55	84	60
3F	7A	0C	19	2C	55	2A	17	55	84	60
3F	7B	0B	19	2A	5B	2A	19	5B	8B	64
3F	7C	0B	18	2A	5B	2B	19	5B	8B	65

		ADJUSTMENT ADDRESS								
C1	C2	A6	A7	A8	A9	AA	AB	B0	B8	B9
40	6F	0F	20	35	45	20	13	45	70	52
40	70	0F	20	32	45	20	15	45	70	53
40	71	0F	1E	32	45	22	15	45	70	53
40	72	0E	1E	2F	4B	22	16	4B	77	57
40	73	0E	1D	2F	4B	23	16	4B	77	57
40	74	0E	1D	2D	4B	23	17	4B	77	58
40	75	0D	1C	2D	50	25	17	50	7E	5C
40	76	0D	1C	2B	50	25	18	50	7E	5C
40	77	0D	1B	2B	50	26	18	50	7E	5D
40	78	0C	1A	2B	55	28	18	55	85	61
40	79	0C	1A	29	55	28	19	55	85	61
40	7A	0C	19	29	55	2A	19	55	85	61
40	7B	0B	19	27	5B	2A	1A	5B	8C	66
40	7C	0B	18	27	5B	2B	1A	5B	8C	66
41	6F	0F	1D	35	45	24	13	45	71	53
41	70	0F	1D	32	45	24	15	45	71	54
41	71	0F	1B	32	45	25	15	45	71	54
41	72	0E	1B	2F	4B	25	16	4B	78	58
41	73	0E	1A	2F	4B	27	16	4B	78	59
41	74	0E	1A	2D	4B	27	17	4B	78	59
41	75	0D	19	2D	50	29	17	50	7F	5D
41	76	0D	19	2B	50	29	18	50	7F	5E
41	77	0D	18	2B	50	2B	18	50	80	5E
41	78	0C	17	2B	55	2C	18	55	86	62
41	79	0C	17	29	55	2C	19	55	86	62
41	7A	0C	16	29	55	2E	19	55	87	63
41	7B	0B	16	27	5B	2E	1A	5B	8D	67
41	7C	0B	15	27	5B	30	1A	5B	8E	67

Table 7-8. (2)

7-2-29. Focus Motor Speed Adjustment

Subject	Arbitrary
Measuring Instrument	Stop watch
Adjustment Page	F
Adjustment Address	30 (LOW-F-SPEED)
Specified Value	2.7 ± 0.5 sec

Adjusting method:

1) Set the FOCUS switch to the AUTO position.
2) Select page F, address EB with the adjustment remote controller, and enter data 01.
   (Focus motor hunting mode setting)
3) Select page F, address 30.
4) Change the adjustment data so that the time required for the focus ring to rotate from the near end position (1.3 m) to the far end position (∞), or vice versa, becomes 2.7 ± 0.5 sec.
5) Select page F, address EB, and enter data 00.
   (Focus hunting mode release)
6) Change the adjustment address to store the adjustment data in the memory.

7-2-30. Macro Area Adjustment (AF-89P Board)

Subject	Arbitrary
Measurement Point	CN801
Measuring Instrument	AF microprocessor data reading jig
Adjustment Page	F
Adjustment Address	37 (ZOOM POSI 4)
Specified Value	(Value at zoom ring WIDE position) +4

Adjusting method:

1) Set the zoom ring to the WIDE position (8 mm).
2) Select adjustment address EB with the adjustment remote controller and set the adjustment data to 03. (Sets zoom position indication mode)
3) Change the adjustment address to 37.
4) Add 4 to the data read from the AF microprocessor data reading jig and enter as the adjustment data. (See Table 7-4. Hexadecimal – decimal conversion table)
5) Change the adjustment address to EB and set the adjustment data to 00. (Releases zoom position indication mode)
6) Change the adjustment address to store the adjustment data in the memory.

7-2-31. Auto Focus Adjustment (AF-89P Board)

1. Adjustment in all black pattern

Subject	All black (cover lens with black cap)
Measurement Point	CN801
Measuring Instrument	AF microprocessor data reading jig
Adjustment Page	F
Adjustment Address	2B (FH BM) 29 (FA BM) 46 (AGC B)

Adjusting method:

1) Set the auto focus to OFF with the focus switch.
2) Select page F, address EB with the adjustment remote controller and set the adjustment data to ED.
   (Set the auto focus filter to FH)
3) Change the adjustment address to 2B.
4) Add 3 to the data read from the AF microprocessor data reading jig and enter as the adjustment data. (FH BM)
5) Select page F, address EB and set the adjustment data to EF.
   (Set the auto focus filter to FA)
6) Change the adjustment address to 29.
7) Add 3 to the data read from the AF microprocessor data reading jig and enter as the adjustment data. (FA BM)
8) Select adjustment address 46 and set the adjustment data to FF.
9) Perform "Adjustment in all white pattern".

2. Adjustment in all white pattern

Subject	All white pattern standard picture frame
Measurement Point	CN801
Measuring Instrument	AF microprocessor data reading jig
Adjustment Page	F
Adjustment Address	2A (FH WM) 45 (AGC W)
Specified Value	FH WM ≦ 28

Adjusting method:

1) Select page F, address EB with the adjustment remote controller and enter adjustment data of ED.
2) Change the adjustment address to 2A.
3) Add 3 to the data read from the AF microprocessor data reading jig and enter as the adjustment data. (FH WM).
   (FH WM should be 00 to 28)
4) Select address EB and set the adjustment data to 0B.
   (Set AGC CONT level indication mode)
5) Change the adjustment address to 45.
6) Enter the data read from the jig as the adjustment data. (AGC W)
7) Select address EB and set the adjustment data to 00.
   (Releases AGC CONT level indication mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-32. Auto Focus Confirmation

Subject	Siemens star (position 1.5 m from the front of the lens reference plane (" ϕ " mark))

Note: Perform adjustment with the EVF (electronic viewfinder) attached.

Checking method:

1) Place the Siemens star 1.5 m from the front of the lens reference surface (See Fig. 7-2.).
2) Set the zoom lever to its TELE-end position (80 mm).
3) Adjust the position of the camera block so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris with IRIS knob (RV201 on FD-45P board). At this time, adjust the illumination to the Siemens star or cover the lens with ND filter to obtain a sharp image on the monitor TV screen.
5) Turn off the auto-focus with FOCUS switch (S206 on FD-45P board).
6) Rotate the focus ring to the close-end position (1.3 m).
7) Press PUSH AUTO button (S207 on FD-45P board).
8) Confirm that there is focusing within 2.0 seconds and a sharp image can be obtained.
9) Let go of PUSH AUTO button, and rotate the focus ring to the far-end position (∞).
10) Press PUSH AUTO button.
11) Confirm that there is focusing within 3.0 seconds and a sharp image can be obtained.

7-2-33. Auto Focus Confirmation at Zoom-Wide

Subject	All black (cover lens with a black cap)

Checking method:

1) Turn off the auto-focus with FOCUS switch.
2) Set the zoom lever to its WIDE-end position (8 mm).
3) Set the focus ring to the far-end position (∞).
4) Turn on the auto-focus with FOCUS switch.
5) Confirm that the focus index position is within the range shown in Fig. 7-35.

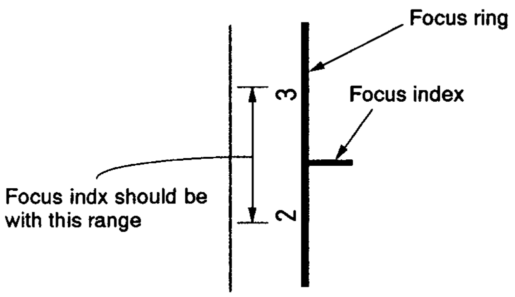


Fig. 7-35.

7-2-34. Manual Gain Confirmation (AF-89P, VC-110P Boards)

Subject	Color bar chart standard picture frame
Filter	ND filter 1.0 (one) and 0.9 (two)
Measuring Point	1: AF-89P board CN801 2: VC-110P board CN307 ① pin
Measuring Instrument	1: AF microcomputer data reading jig. 2: Oscilloscope
Specified Value	1: 15~50 2: 115 ± 10 mV

Adjusting method:

1) Set data OB to page F, address EB with the adjustment remote controller, and change the address. (AGC CONT level display mode setting)
2) Set the GAIN switch to the "O dB" position.
3) Without attaching a ND filter to the lens, confirm that the display of the AF microcomputer data reading jig is 15 to 50.
4) Set the GAIN switch to the 18 dB position.
5) Attach a ND filter 2.8 (1.0+0.9+0.9) to the lens.
7) Confirm that Y signal level of Pin① (CAM Y) of CN307 on the VC-110P board (or pin (A8) of check point array) is 115 ± 10 mV.
8) Set the GAIN switch back to the AUTO position.
10) Set data 00 to page F, address EB with the adjustment remote controller, and change the address.

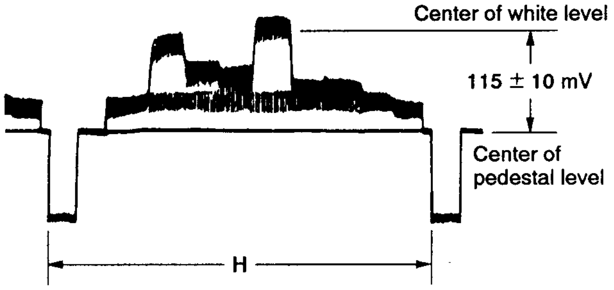


Fig. 7-36.

7-2-35. Indoor White Balance Check

Subject	White pattern standard picture frame
Measurment Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope

Preparation:

1) Set HOLD switch of the adjustment remote controller to the off position.

Checking method:

1) Set the white balance switch to the indoor white balance (☼) position.
2) Confirm that the center of the white luminance point is within the standard circle.
   Note: When using a vectorscope, adjust the gain and phase of the vectorscope so that burst luminance point moves to the burst position of the color reproduction frame.

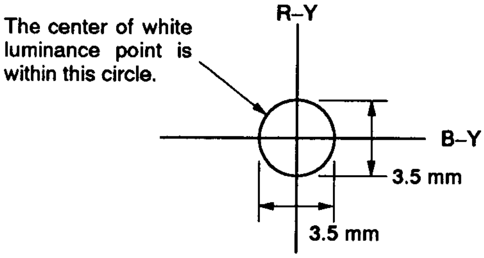

The center of white luminance point is within this circle.
R–Y
B–Y
3.5 mm
3.5 mm

Fig. 7-37.

7-2-36. Outdoor White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vector scope

Preparation:

1) Set HOLD switch of the adjustment remote controller to the off position.

Checking method:

1) Cover the lens with the C14 filter for color temperature correction.
2) Set the white balance switch to the outdoor white balance. (✹) position.
3) Confirm that the center of the white luminance point is within the standard circle.
   Note: When using a vectorscope, adjust the gain and phase of the vectorscope so that burst luminance point moves to the burst position of the color reproduction frame.

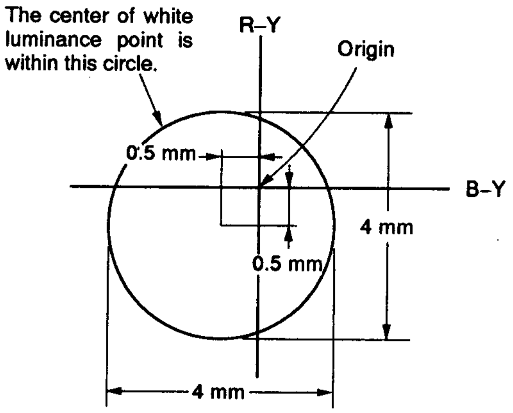

The center of white luminance point is within this circle.
R–Y
Origin
0.5 mm
B–Y
4 mm
0.5 mm
4 mm

Fig. 7-.38.

7-2-37. Auto White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filters 1.0 and 0.3
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope

Checking method:

1) Select the adjustment page F and the adjustment address EC with the adjustment remote controller and set the adjustment data to 02. (Auto white balance check mode setting)
2) Change the adjustment address to store the adjustment data in the memory.
3) Set HOLD switch of the adjustment remote controller to the off position.
4) Set the white balance switch to the auto white balance position.
5) Cover the lens with the C14 filter and confirm that the white luminance point matches with the origin in about 5 seconds.
6) Confirm that the white luminance point is within the circle 1.
7) Remove the C14 filter.
8) Cover the lens with ND filter 1.3 (1.0+0.3) and wait for 5 seconds.
9) Confirm that the white luminance point is within the circle 2.
10) Set HOLD swith of the adjustment remote controller to the on position.
11) Select the adjustment page F and the adjustment address EC and set the adjustment data to 01.
12) Change the adjustment address to store the adjustment data in the memory.

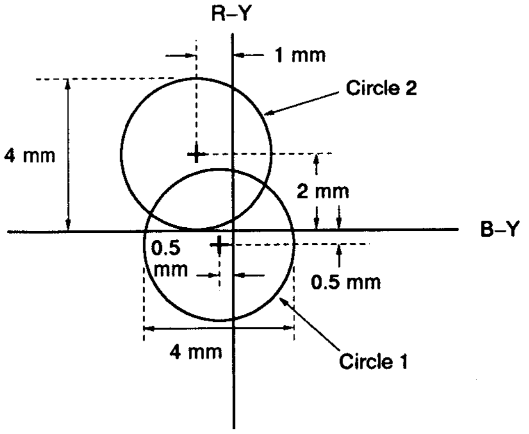


Fig. 7-39.

7-3. DIGITAL TITLER SYSTEM ADJUSTMENT

7-3-1. 4FSC Frequency Adjustment (SS-146P Board)

Mode	E-E
Subject	Non-signal
Measurement Point	Pin ⑤ of IC801
Measuring Instrument	Frequency counter
Adjustment Element	CT802
Specified Value	4433619 ± 50 Hz

Connection:

1) Connect Pin ⑲ of IC808 and Pin ⑥ of IC801 (VIDEO 5V) with a jumper wire.
2) Connect Pin ㉝ of IC808 and Pin ⑥ of IC801 with 10 kΩ resistor.
3) Connect Pin ㉝ of IC808 and GND with 22 kΩ resistor.
4) Disconnect CN801.

Adjusting Method:

1) Adjust to 4433619 ± 50 Hz with CT802.

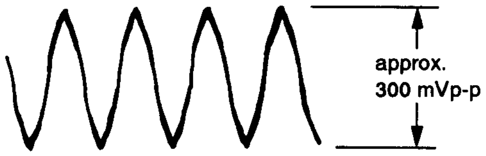


Fig. 7-40.

7-3-2. Controller Frequency Adjustment (SS-146P Board)

Subject	All black (Cover lens with black cap)
Measurement Point	CH1: Pin ④ of IC801 (TITLE BLK) CH2: Pin ③ of CN802 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Element	CT801
Specified Value	2.0 ± 0.4 μsec

Adjusting Method:

1) Press DATA SCREEN button.
2) Press TITLE 1 button.
3) Press MEMORY button.
4) Press COLOR/MODE button untill all black title is displayed on the monitor TV screen.
5) Adjust to 2.0 ± 0.4 μsec with CT801.

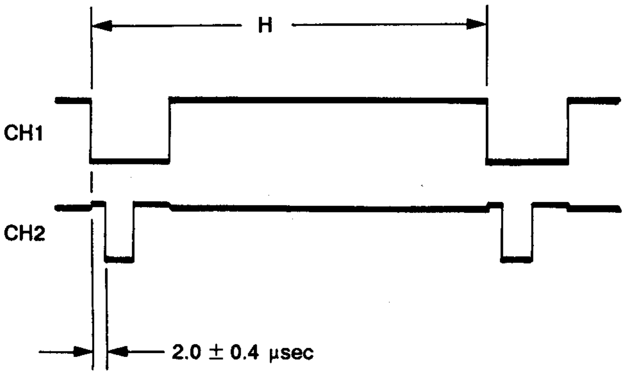

H
CH1
CH2
2.0 ± 0.4 μsec

Fig. 7-41.

7-3-3. Title A/D Threashold Level Adjustment (SS-146P Board)

Subject	Not needed
Measurement Point	CH1: Pin ① of IC801 CH2: Pin ① of IC809
Measuring Instrument	Oscilloscope (DC range, 0.2V/DIV)
Adjustment Element	RV801
Specified Value	0.105 ± 0.035V

Adjusting method:

1) Disconnect CN801.
2) Input 0.5 Vp-p staircase signal to Pin ① of CN801.
3) Adjust the threashold level to 0.105 ± 0.035V with RV801.
4) Disconnect the staircase signal.
5) Set POWER switch to CAMERA position.

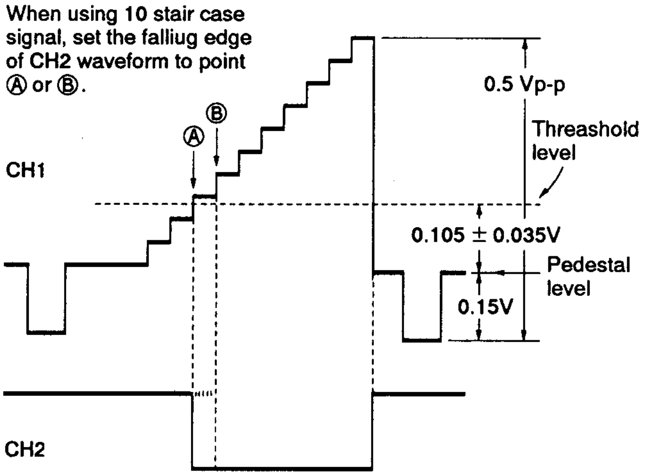

When using 10 stair case signal, set the falliug edge of CH2 waveform to point Ⓐ or Ⓑ.
Ⓑ
Ⓐ
CH1
0.5 Vp-p
Threashold level
0.105 ± 0.035V
Pedestal level
0.15V
CH2

Fig. 7-42.

7-3-4. Title Chroma Phase Adjustment (SS-146P board)

Subject	All black (Cover lens with black cap)
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vertorscope
Adjustment Element	RV802
Specified Value	0 ± 3°

Adjusting Method:

1) Press DATA SCREEN button.
2) Press TITLE 1 button.
3) Press MEMORY button.
4) Press COLOR/MODE button untill a violet title displayed on the monitor TV screen.
5) Adjust RV802 so that the two separate violet luminance points becames one.

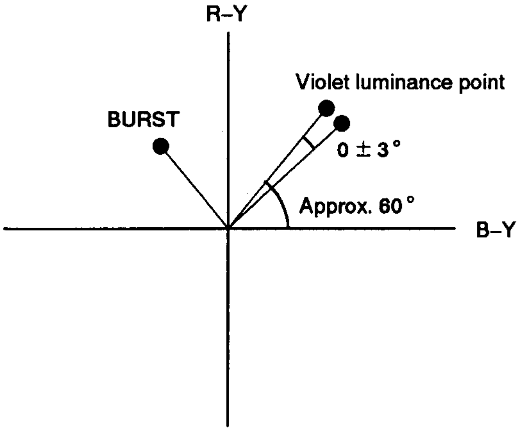

R-Y
Violet luminance point
BURST
0 ± 3°
Approx. 60°
B-Y

Fig. 7-43.

7-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

7-4-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for operation check Monoscope portion
Specified Value	See Fig. 7-45.

Adjusting method:

1) Adjust the volume array Ⓓ (BRIGHT) for a luminance level which provides appropriate brightness of the CRT screen. (See Fig. 7-46.)
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Re-tighten the DY tightening nut. (Do not tighten excessively.)

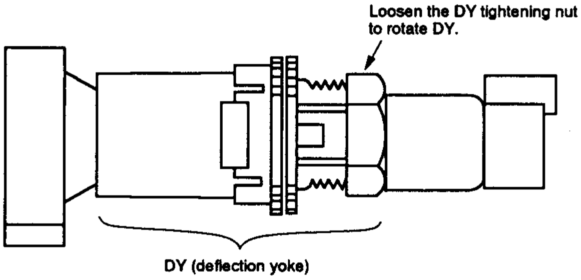
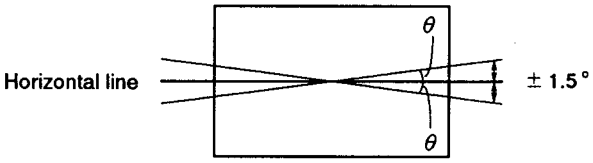
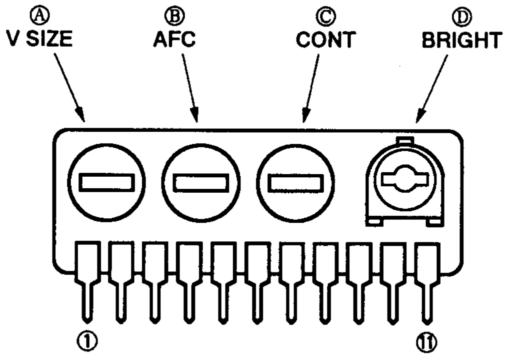

Loosen the DY tightening nut to rotate DY.
DY (deflection yoke)

Fig. 7-44.


θ
Horizontal line
± 1.5°
θ

Specified value: Image should be within ± 1.5° of horizontal line.

Fig. 7-45.


Ⓐ V SIZE
Ⓑ AFC
Ⓒ CONT
Ⓓ BRIGHT
①
⑪

Volume array (CP901)

Fig. 7-46.

7-4-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for operation check Monoscope portion
Specified Value	See Fig. 7-48.

Adjusting method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins.

Note: Since the centering position is affected by the earth magnetism, turn the equipment about 360 ° horizontally, and make adjustments at the position which exhibits center portion of displacements on the image.

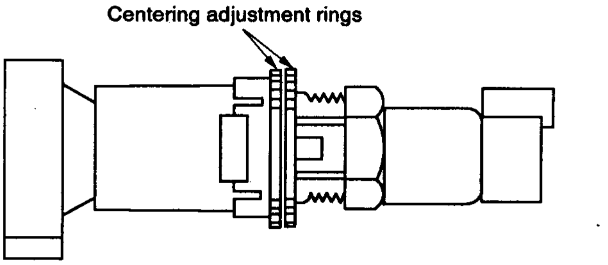


Fig. 7-47.

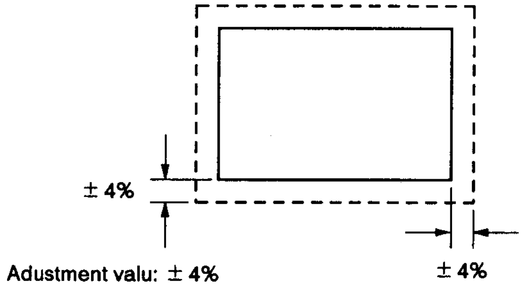


Fig. 7-48.

7-4-3. AFC Adjustment (VF-13P Board)

Mode	E-E or camera stand-by
Signal	Color bar
Measurement Point	C915 ⊕ terminal
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	Volume array Ⓑ (AFC)
Specified Value	2.3 ± 0.1 Vdc

Adjusting method:

1) Adjust to 2.3 ± 0.1 Vdc with the volume array Ⓑ.
(Refer to Fig. 7-46.)

7-4-4. Horizontal Amplitude Adjustment (VF-13P Board)

Mode	Playback
Signal	Alignment tape for operation check Monoscope portion
Adjustment Element	C905
Specified Value	12 ± 3%

Adjusting method:

1) Adjust RV901 for focusing.
2) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating the volume array Ⓐ.
(See Fig. 7-46.)
3) Rotate the volume array Ⓓ to set the brightness to the normal level.
4) Short or open the pattern A of the H size adjustment capacitor (C905) to provide horizontal overscans of 12 ± 3% (total of left and right).
(See Fig. 7-49.)

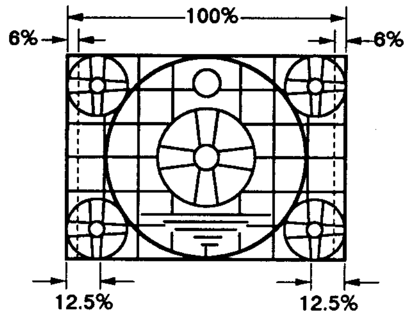
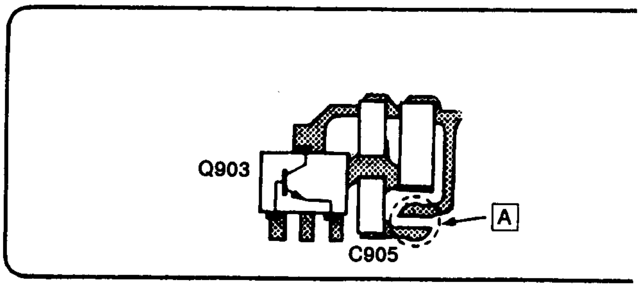


Fig. 7-49.



VF-13P board (Conductor side)

A section	H size
Open	Small
Short	Large

Fig. 7-50.

7-4-5. Vertical Amplitude Adjustment (VF-13P Board)

Mode	Playback
Signal	Alignment tape for operation check Monoscope portion
Adjustment Element	Volume array Ⓐ (V size)
Specified Value	12 ± 3%

Adjusting method:

1) Adjust with the volume array Ⓐ to set the vertical direction overscan to 12 ± 3% (total of upper and lower). (Refer to Fig. 7-46.)

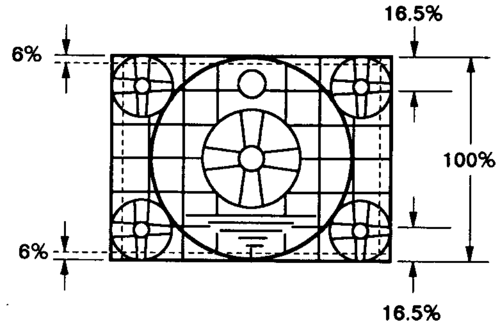


Fig. 7-51.

7-4-6. Brightness and Contrast Adjustment (VF-13P Board)

Mode	Playback
Signal	Alignment tape for operation check Monoscope portion
Adjustment Element	Brightness: Volume array Ⓓ (BRIGHT) Contrast: Volume array Ⓒ (CONT)

Adjusting method:

1) Adjust the volume arrays Ⓓ and Ⓒ alternately until the bright and dark areas of a gray scale are displayed correctly. (See Fig. 7-46.)
(The bright area should not be as bright as the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and third darkest area is possible.)

7-4-7. Focus Adjustment

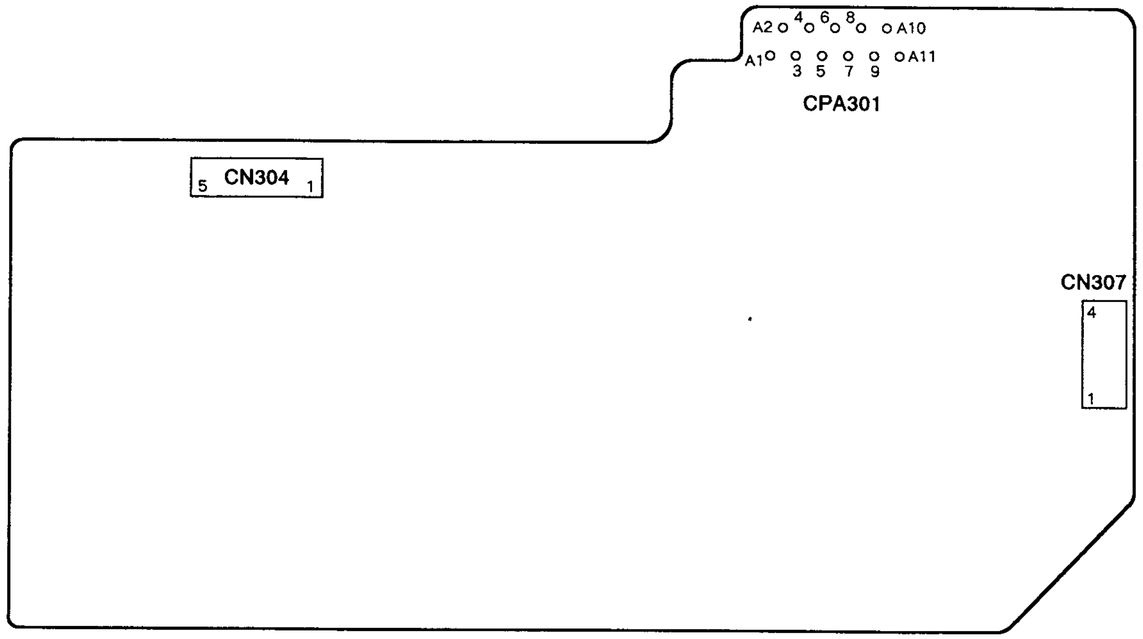
Mode	Playback
Signal	Alignment tape for operation check (WR5-8CSE) Monoscope portion
Adjustment Element	RV901

Adjusting method:

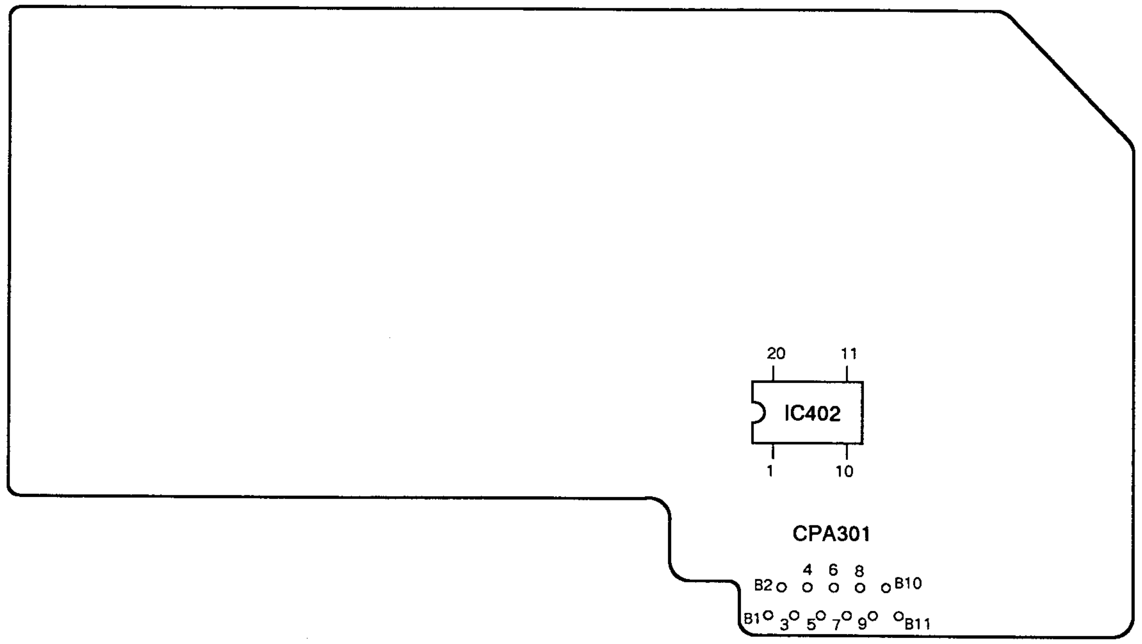
1) Adjust RV901 to obtain the best focusing.

7-5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

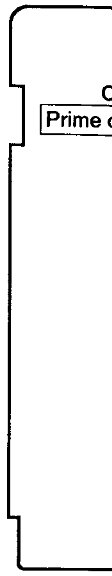
VC-110P BOARD (COMPONENT SIDE)



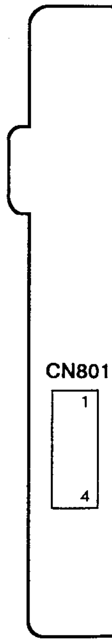
VC-110P BOARD (CONDUCTOR SIDE)



CD-82P

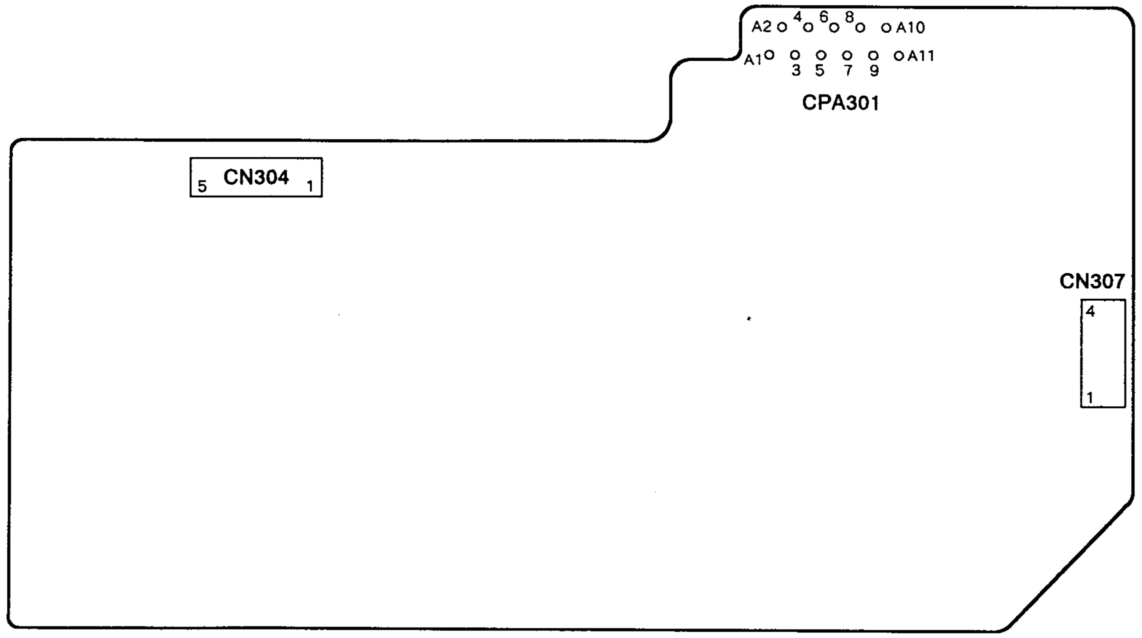


AF-89P

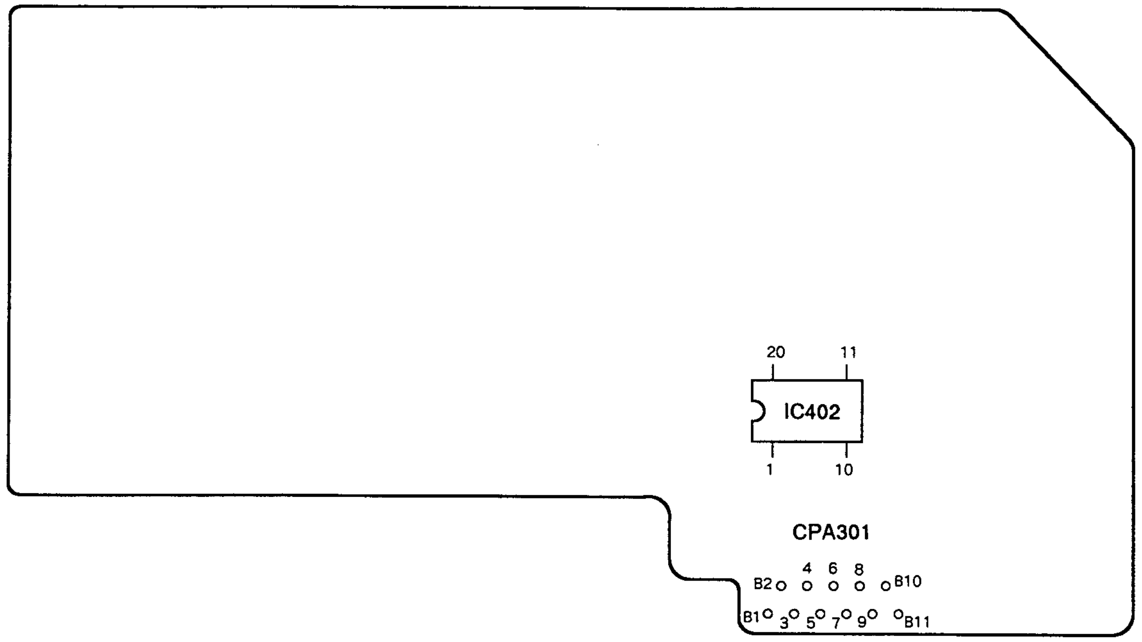


7-5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

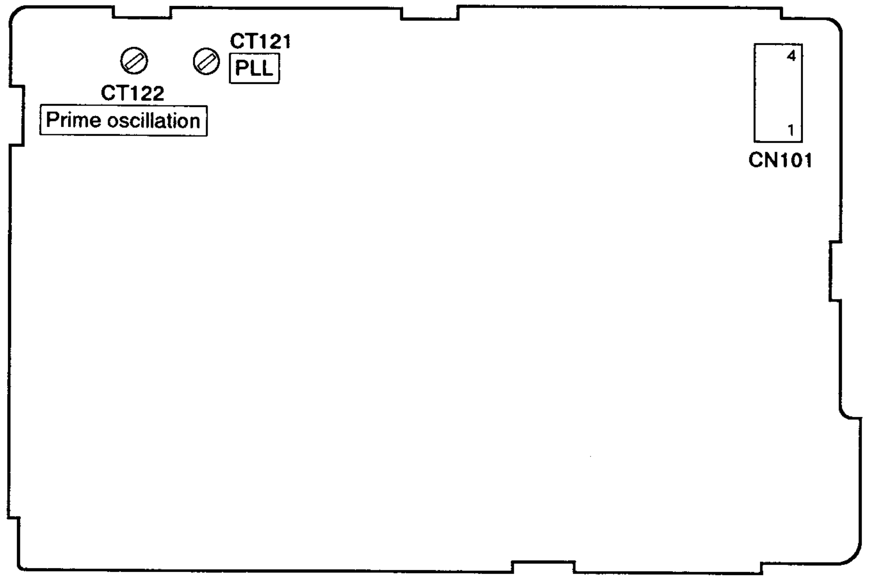
VC-110P BOARD (COMPONENT SIDE)


A2
4
6
8
A10
A1
3
5
7
9
A11
CPA301
5
CN304
1
CN307
4
1

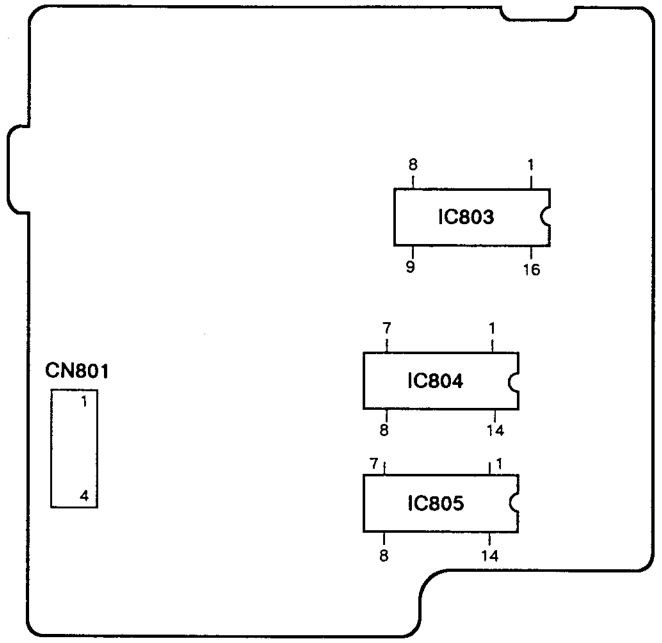
VC-110P BOARD (CONDUCTOR SIDE)


20
11
IC402
1
10
CPA301
4
6
8
B2
B10
B1
3
5
7
9
B11

CD-82P BOARD (COMPONENT SIDE)


CT121
PLL
CT122
Prime oscillation
4
1
CN101

AF-89P BOARD (COMPONENT SIDE)


8
1
IC803
9
16
7
1
IC804
8
14
7
1
IC805
8
14
CN801
1
4

SECTION 8
MECHANISM BLOCK ADJUSTMENTS

Mechanism Block Adjustments

Refer to the separate "8 mm Video Mechanism Block Adjustment Manual Ⅲ U Mechanism" for adjustment and checking of the mechanism block and for replacement of mechanical parts.
Refer to the following for setting of track shift mode.

8-1. TRACK SHIFT MODE SETTING

Note: Camera part and video part should have been installed.

1) Connect the adjusting remote control unit to the remote terminal (VJ-6 board J813)
2) Turn on the HOLD switch of the adjusting remote control unit.
3) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote control unit can be disconnected if its PAUSE button is pressed. In this case, be sure to perform "8-3. Processing after completing operation" after completing adjustments.)

8-2. PREPARATION FOR ADJUSTMENT

1) Perform cleaning of the tape running surface (tape guides, drum, capstan shaft, and pinch roller).
2) Connect the oscilloscope.
   CH 1: Pin ④ (RF CH2) of CN802 on the MR-30 board
   External trigger: Pin ② (RF SWP) of CN802 on the MR-30 board
3) Play back the alignment tape (WR5-1CP: 8-967-995-07) for tracking.
4) Confirm that the RF waveform on oscilloscope at both entrance and exit sides is flat. (See Fig. 8-1.)
   Perform the adjustment described below if not flat.

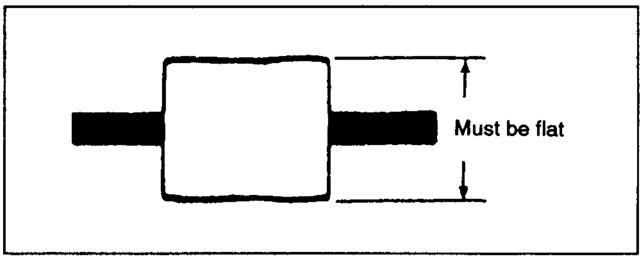


Fig. 8-1.

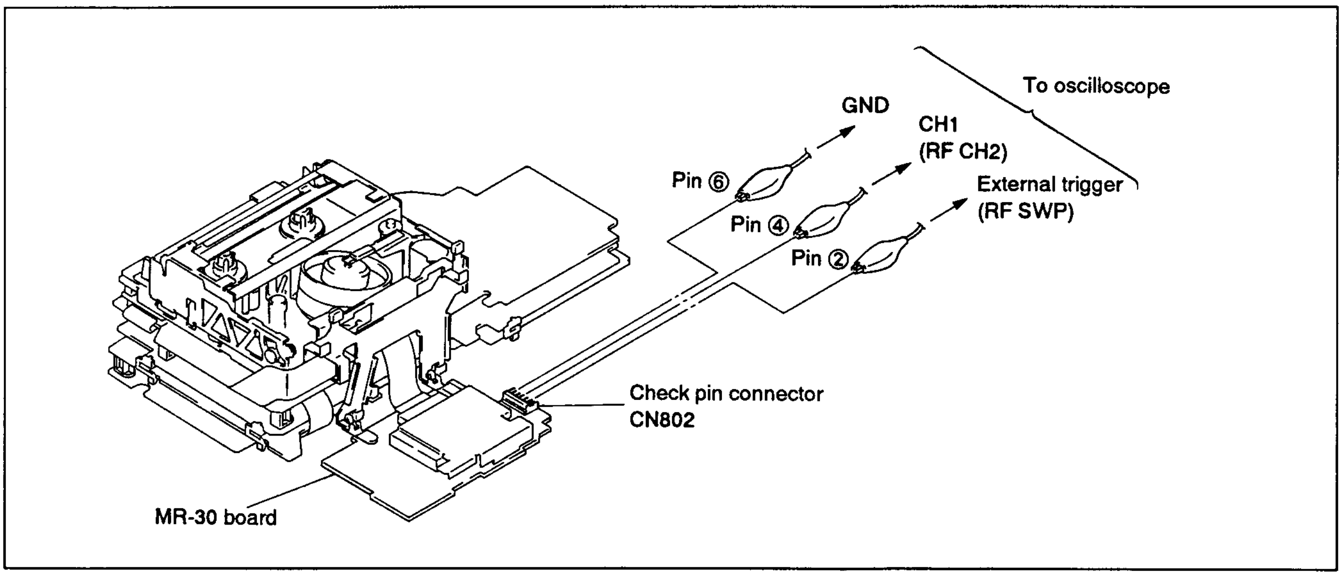


Fig. 8-2.

8-3. PROCESSING AFTER COMPLETING OPERATIONS

1) Connect the adjusting remote control unit, and turn on the HOLD switch.
2) Select page: D, address: 01, and set data: 00.
3) Press the PAUSE button of the adjusting remote control unit.
4) Remove the power supply from the unit.

SECTION 9
VIDEO BLOCK ADJUSTMENTS

During adjustment, see the arrangement diagram for adjustment parts from page 368.

9-1. PRE-ADJUSTMENT PREPARATIONS

Use the following measuring instruments for adjustment of the VTR block.

9-1-1. Required Equipment

1) Monitor TV
2) Dual trace oscilloscope of over 30 MHz band, incorporates delay mode. (Use 10:1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator with video output terminal (See 9-1-3.)
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply (over 3A voltage capacitance)
11) Alignment tapes
    - For tracking adjustment (WR5-1CP)
      Parts Code: 8-967-995-07
    - For video frequency characteristics adjustment (WR5-7CE)
      Parts Code: 8-967-995-18
    - For L mode operation check
      for SP (WR5-5CSP)
      Parts Code: 8-967-995-47
      or (WR5-4CSP)
      Parts Code: 8-967-995-46
      for LP (WR5-4CL)
      Parts Code: 8-967-995-56
      for AFM stereo operation check (WR5-9CS)
      Parts Code: 8-967-995-28
    - For E mode operation check (ME tape)
      for SP (WR5-8CSE)
      Parts Code: 8-967-995-48
      for LP (WR5-8CLE)
      Parts Code: 8-967-995-57
12) Adjustment remote controller.
    Note: If the microprocessor in the adjustment remote controller unit is not the new type (μPD7503G-C56-12), the switch over of the page cannot be carried out. In this case, replace with the new microprocessor (8-759-148-35).

9-1-2. Precautions

1. Switch setting

Unless otherwise specified, set switches to the following positions.

- POWER (CAMERA/OFF/VTR) switch
  (S743 on VK-25P board)......VTR
- DIGITAL EFECT switch (S761 on DK-22P board)......OFF
- Hi8 switch (S770 on DK-22P board)......AUTO

2. Connection to the camera block

The camera block is not required other than "Battery down adjustment" and "switching position adjustment". Perform adjustment with the camera block removed. Remove the camera block by disconnecting the following sections:

- CN305 on VC-110P board (12-pin)
- CN306 on VC-110P board (3-pin)
- CN307 on VC-110P board (4-pin)
- Connector (2-pin) on CAMERA DC-DC converter

3. Connection to the left cabinet

When the view finder and adjustment remote commander are not required, neither the left cabinet is required. Remove the cabinet by disconnecting the following sections:

- CN821 on SW113P board (3-pin)
- CN811 on VJ-16P board (4-pin)
- CN812 on VJ-16P board (7-pin)
- CN861 on HJ-11P board (11-pin)

4. Connection to the right cabinet

Following connections are required for driving the video block and the camera block. Connect with using extension cables.

- CN211 on FD-45P board — W227 on SS-146P board
  Extension cable: 22-pin flat cable (1 mm pitch)
  Parts code: J-6082-037-A

Since the following connections are not required for adjustments, remove them if necessary.

- CN212 (26-pin) on FD-45P board......LCD
  Connect with using a extention cable if necessaly.
  Extention cable: 30-pin flat cable (1 mm pitch)
  Part code: J-6082-108-A
- CN301 (6-pin) on PC-52P board......Stereo microphone jack
- CN312 (6-pin) on PC-52P board......Headphone jack
- CN310 (5-pin) on PC-52P board......Monaural microphone jack
- CN309 (4-pin) on PC-52P board......Narration microphone
- CN232 (2-pin) on AS-22P board......Speaker

Since the following connections are not required other than audio circuit adjustment, remove them if necessary.

- CN306 (10-pin) on PC-52P board......Audio selection switch
- CN311 (3-pin) on PC-52P board......Level meter
- CN302 (6-pin) on PC-52P board......REC LEVEL VR
- CN228 (4-pin) on SS-146P board......Audio monitor switch,
  lithium battery

5. Upper cabinet (stereo microphone, operation panel)

Since the power switch and the operation switch are on the upper cabinet, be sure to connect the upper cabinet. Connect the following connector to the right cabinet. Other connections are not required.

- CN701 on CK-57P board — W202 (15-pin) on FD-45P board

6. Connection to DI-21P board

Since the Y, C and sync signals pass through the DI-21P board, the following connections are required. When adjusting on the VI-100 and SS-146P boards, connect as follows with extension cables.

- CN408 on VI-100 board — CN601 on DI-21P board
  Extension cable: 2-pin cable (1.5 mm pitch)
  Parts code: J-6080-912-A
- CN414 on VI-100 board — CN602 on DI-21P board
  Extension cable: 2-pin cable (1.5 mm pitch)
  Parts code: J-6080-912-A

7. Connection between the PC-52P board and the SS-146P/MR-30 boards

When adjusting on the VI-100 and SS-146P boards, extend or remove the connectors as follows.

- Connect:
  CN307 on PC-52P board — W002 on SS-146P board
  Extension cable: 22-pin flat cable (1 mm pitch)
  Parts code: J-6082-037-A
- Disconnect:
  CN303 on PC-52P board — CN805 on MR-30 board (8-pin)

As for the other connections, refer to item 4 or 6.

9-1-3. Connection of Equipment

Connect equipments as shown in Fig. 9-1 according to the indication of the input terminal (S VIDEO or VIDEO) and set POWER (CAMERA/OFF/VTR) switch (S743 on VK-25P board) to VTR position for adjustments; however, except when performing "digital picture circuit adjustment".

The input terminal is indicated in the signal column ( ). Unless otherwise specified, any of these input terminals can be used. Further, S VIDEO IN terminal has priority. When adjusting using VIDEO IN terminal for input, remove a connector from S VIDEO IN terminal.

Note: In case an adjustment is performed with using VIDEO input, although instructed to adjust with using S VIDEO input, the required specification may not be satisfied. Be sure to follow the indications.

When adjusting with using a VTR that has the S video output terminal as a signal source, according of which performance of this unit is effected. Be sure to use a pattern generator with Y/C separation output terminal as possible.

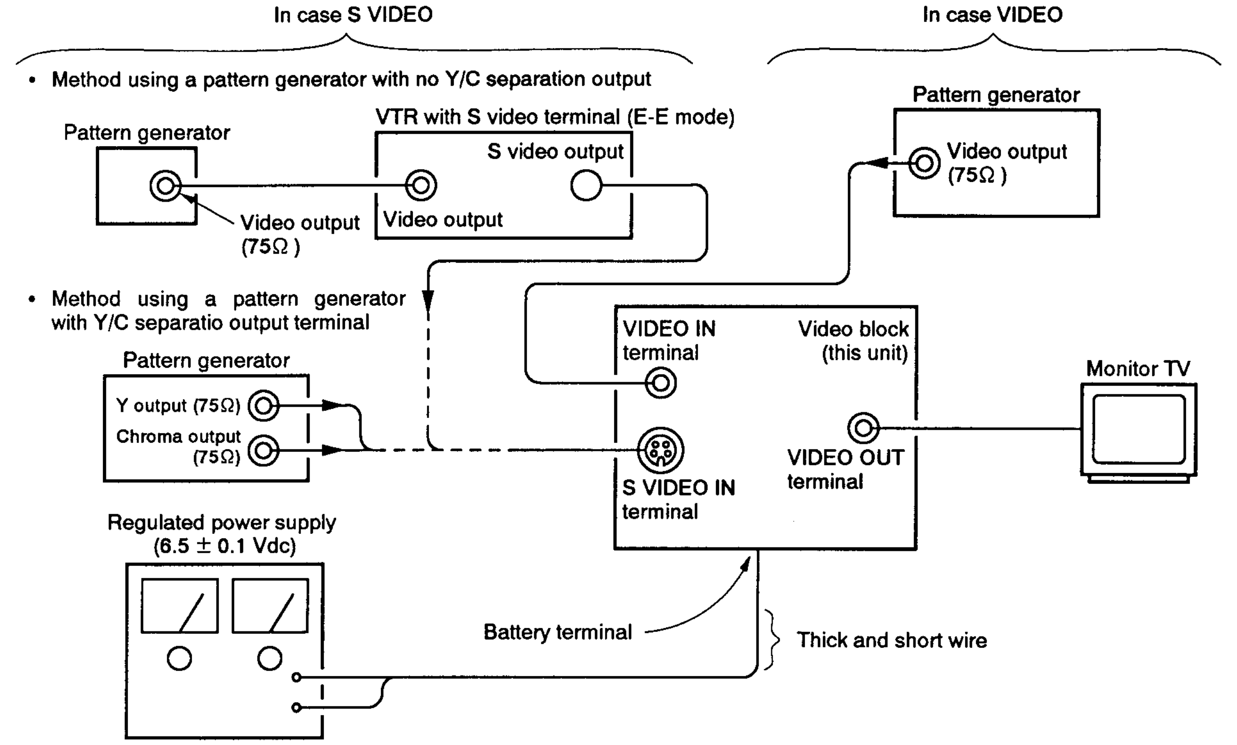

In case S VIDEO
• Method using a pattern generator with no Y/C separation output
Pattern generator
VTR with S video terminal (E-E mode)
S video output
Video output
Video output (75Ω)
• Method using a pattern generator with Y/C separatio output terminal
Pattern generator
Y output (75Ω)
Chroma output (75Ω)
Regulated power supply (6.5 ± 0.1 Vdc)
In case VIDEO
Pattern generator
Video output (75Ω)
VIDEO IN terminal
Video block (this unit)
S VIDEO IN terminal
VIDEO OUT terminal
Monitor TV
Battery terminal
Thick and short wire

Fig. 9-1.

9-1-4. Input Signal Check

Since the video output signal obtained from the pattern generator is used as an adjusting signal for the VTR block, this video output signal should be within the required specifications.

1. When S VIDEO Input

Connect an oscilloscope to Y signal terminal of S VIDEO IN terminal (J901 on PJ-22P board) and confirm that the sync component of Y signal is approximately 0.3 Vp-p and that the amplitude of the video signal is approximately 0.7 Vp-p. (Furthermore, if using a VTR with S video output terminal, confirm that there are no residual chroma and burst signals.) Connect an oscilloscope to the chroma signal of the S VIDEO IN terminal and confirm that the burst signal amplitude of the chroma signal is approximately 0.3 Vp-p with flat characteristics, and that the signal amplitude ratio between the burst and chroma signals is 0.30:0.66. The Y and chroma signals used for the video block adjustment are shown in Fig. 9-2.

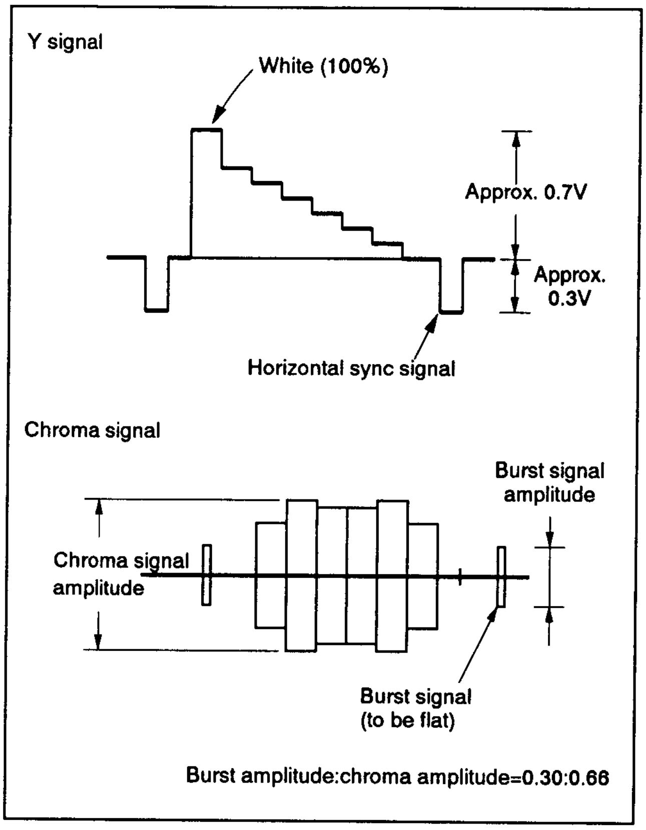

Y signal
White (100%)
Approx. 0.7V
Approx. 0.3V
Horizontal sync signal
Chroma signal
Burst signal amplitude
Chroma signal amplitude
Burst signal (to be flat)
Burst amplitude:chroma amplitude=0.30:0.66

Fig. 9-2. Color bar signal of pattern generator

2. When VIDEO Input

Connect an oscilloscope to VIDEO IN terminal (J902 on PJ-22P board) and confirm that the amplitude of the video sync signal is approximately 0.3V, that the video block amplitude is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and that the signal level ratio between the burst signal and "Red" signal is 0.30:0.66. The video signal (color bars) used for VTR block adjustment are shown in Fig. 9-3.

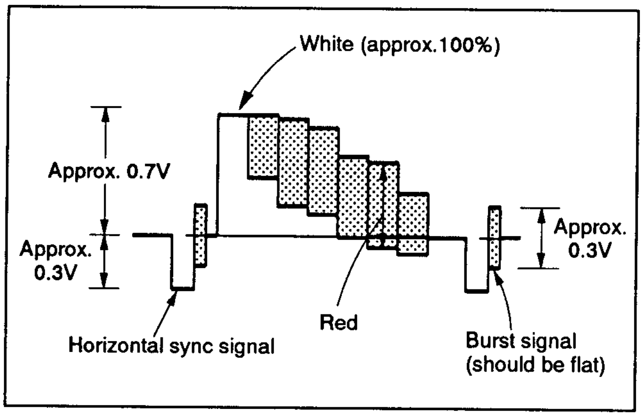

White (approx.100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

Fig. 9-3. Color bar signal of pattern generator

9-1-5. Alignment Tape

The following alignment tapes are available.
Use the tape indicated in the signal column; however, in case there is no type indication in the signal column, use any tape for operation check.

Name	REC mode	Type	Speed	Contents		Usage
				Video area	PCM area	
Tracking (WR5-1CP)	L	MP	SP	CH2: 1 MHz tape pass adjustment signal Switching position adjustment marker (CH1: 9 MHz)		Tape pass adjustment Switching position adjustment
Video Frequency Characteristics (WR5-7CE)	E	ME	LP	RF sweep: 0 to 15 MHz Markers: 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Operation Check (WR5-5CSP)	L	MP	SP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) 400 Hz, 60% modulation	• Audio signal (PCM) Monoscope: 20 Hz 20sec, 400 Hz 20sec, 14 kHz 20sec } Repeat four times. Color bar: 1 kHz 4 min.	Operation check
WR5-8CSE	E	ME	SP		• Audio signal (PCM) 400 Hz	
WR5-4CL	L	MP	LP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) 400 Hz, 60% modulation		
WR5-8CLE	E	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo operation check (WR5-9CS)	L	MP	SP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) Stereo section L ch: 400 Hz, R ch: 1 kHz Bilingual section MAIN: 400 Hz, SUB: 1 kHz	• Audio signal (PCM) 400 Hz	AFM stereo PB matrix adjustment

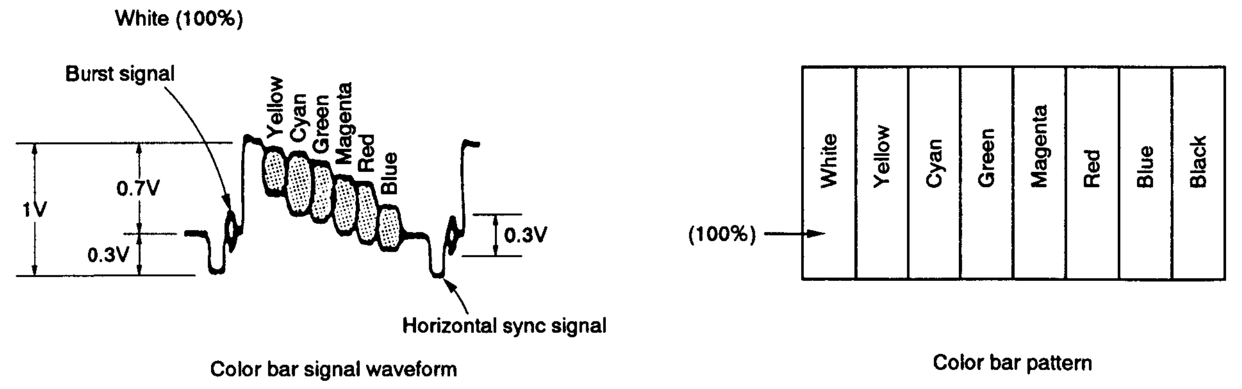
Note: Recording mode
L ················Conventional mode
E ················Hi8 (high band) mode

Tape type
MP ··············Particle type metal tape
ME ··············Evaporated type metal tape

Table 9-1.

Note: Measured at VIDEO OUT terminal (75Ω termination).

75% color bar signal recorded on an alignment tape is shown in Fig. 9-4.



Color bar signal waveform

Color bar pattern

Fig. 9-4. Alignment tape color bar signal

9-1-6. I/O Level Impedance

Video input	Pin jack Input signal: 1 Vp-p, 75Ω unbalanced, negative sync
Video output	Pin jack Output signal: 1 Vp-p, 75Ω unbalanced, negative sync
S video input:	(4-pin mini DIN) Luminance signal: 1 Vp-p, 75Ω unbalanced, negative sync Chroma signal: 0.3 Vp-p, 75Ω unbalanced
S video output:	(4-pin mini DIN) Luminance signal: 1 Vp-p, 75Ω unbalanced, negative sync Chroma signal: 0.3 Vp-p, 75Ω unbalanced
Audio input	Pin jack Input level: –7.5 dBs (0 dBs=0.775 Vrms)
Audio output	Pin jack Specified output: –7.5 dBs (when 47 kΩ loaded) Output impedance: Less than 2.2 kΩ

9-1-7. Recording Mode (E Mode/L Mode) Selection

Recording mode (E mode/L mode) of this unit can be selected as follows; however, the playback mode (E mode/L mode) can be selected automatically according to the recording mode of a tape to be used.

Hi8 switch (L mode/E mode selection switch) (S770 on DK-22P board)	Tape	Recording mode
AUTO (E mode)	ME	E
	MPHG	
	MP	L
OFF (L mode)	ME	L
	MPHG	
	MP	

Table 9-2.

9-1-8. Service Mode

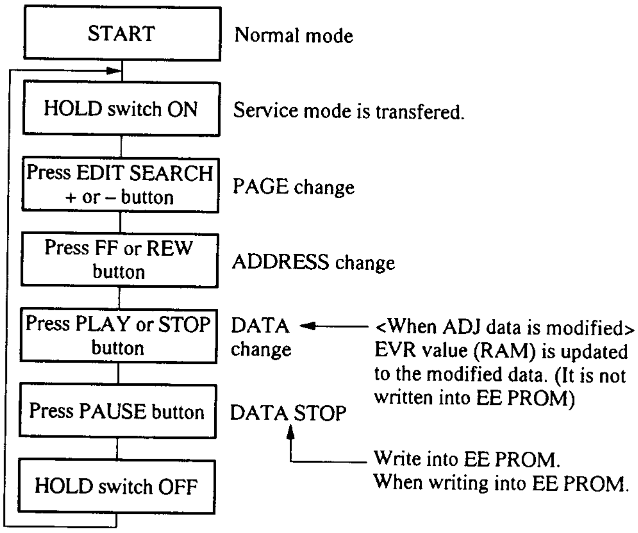
This unit is equipped with service mode for adjustment and operation checking.

Note: Camera part and video part should have been installed.

1. Setting service mode

1) Connect the adjustment remote control unit to REMOTE terminal (J813 on VJ-6P board).
2) Set HOLD switch of the adjustment remote control unit to HOLD (SERVICE) position.

2. Transfer method of the service mode with adjustment remote control unit


START
Normal mode
HOLD switch ON
Service mode is transfered.
Press EDIT SEARCH + or – button
PAGE change
Press FF or REW button
ADDRESS change
Press PLAY or STOP button
DATA change
<When ADJ data is modified> EVR value (RAM) is updated to the modified data. (It is not written into EE PROM)
Press PAUSE button
DATA STOP
Write into EE PROM. When writing into EE PROM.
HOLD switch OFF

3. Releasing service mode

The service mode is released by returning HOLD switch of the adjustment remote controll unit to NORMAL position or by disconnecting the adjustment remote control unit from REMOTE terminal.

4. Setting and releasing test mode

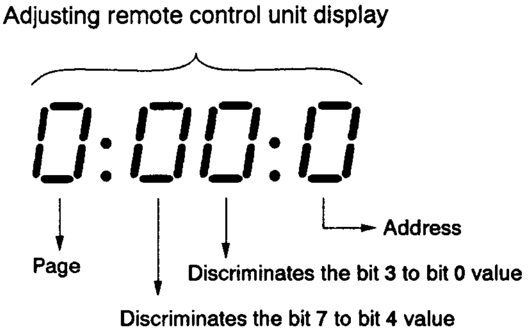
Page D	Address 01

Code	Testing contents	
00	Test mode release	
01		• Prohibition of one minute slow release • Prohibition of power off in the battery-end
02		
03	Tracking shift playback (for the tape passing adjustment)	

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

5. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:0
Page
Address
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

6. Prohibitions and permissions of various operations

Page 1	Address 3F

Bit	Prohibited Items	1	0
0	Compulsory camera's power on	Compulsory power on	Obedient to power supply switch
1	Compulsory VTR's power on	Compulsory power on	Obedient to power supply switch
2	Data setting to serial parallel	Prohibit	Permit
3	Interpolation of time code	Prohibit	Permit

Page 1	Address E4

Bit	Prohibited Items	1	0
0	Key input prohibition	Prohibit	Permit
1	LCD, LED all lit	All lit	Ordinary display

7. Key matrix check

Page 1	Address 68 to 6F, 5F

	bit 7 (K IN 8)	bit 6 (K IN 7)	bit 5 (K IN 6)	bit 4 (K IN 5)	bit 3 (K IN 4)	bit 2 (K IN 3)	bit 1 (K IN 2)	bit 0 (K IN 1)
Address 68 (K OUT 1)	STOP	VTR POWER	CAM POWER	TC AFTER REC	EFFECT LEVEL 3	EFFECT LEVEL 2	FLASH MOTION	CLEAR
Address 69 (K OUT 2)	PIC. IN STILL	DIGITAL ZOOM	W. FADER /CROSS. F	CHROMA	NR	PIC. ART	MULTI	STOP MOTION
Address 6A (K OUT 3)	MEMORY	COLOR	TITLE 2	TITLE 1	STOROBO	INTERVAL REC	SLOW (–)	SLOW (+)
Address 6B (K OUT 4)	EDIT (–) REV	EDIT (–) –X1	EDIT (+) CUE	EDIT (+) X1	S VIDEO IN	DIGITAL ON	LP/–SP	STD./HI-8
Address 6C (K OUT 5)	DATA SCREEN	INDEX ERASE	INDEX	INDEX MARK	EJECT	AFM AUDIO	PCM AUDIO	COUNTER TC/NOR
Address 6D (K OUT 6)	SLOW	FRAME	PAUSE	REC	ZERO MEMORY	COUNTER RESET	TIME	DATE
Address 6E (K OUT 7)	REW	F.F	PLAY	AUDIO DUBING	AUTO FOCUS	CORDING	CAM STBY	START /STOP
Address 6F (K OUT 8)	SHUTTER 1/10000	SHUTTER 1/4000	SHUTTER 1/1000	SHUTTER 1/250	SHUTTER 1/120	AUTO LOCK	GAIN 18 dB	GAIN 0 dB
Address 5F (K OUT 9)					ONE PUSH	W. B	W. B ☀	W. B 💡

1····key switch ON
0····key switch OFF

8. Checking data code

Page 1	Address A0 to A5

Address	Terms	Contents
A0	Second	
A1	Minute	
A2	Time	
A3	Day	
A4	Month	
A5	Year	

9. Checking time code

Page 1	Address D0

Address	Terms	Contents
D0	Time	
D1	Minute	
D2	Second	
D3	Frame	

10. Page D Address List

Address	Contents	Adjustment data	
		Initial value	Memo column
00		00	00
01	Test mode	00	00
02	Not used		
03	Not used		
04	Switching position adjustment data (low)	00	
05	Switching position adjustment data (high)	05	
06	Not used		
07	Battery down adjustment data	00	
08 to FF	Not used		

Note 1: This page data is memoried on the non-volatile memory (EEPROM)

Note 2: The adjustment data initial value is the data to be input before performing video section adjustment.

Note 3: The data listed in the adjustment data memo colum are the fixed data.

9-2. POWER SUPPLY CHECK

9-2-1. POWER SUPPLY Voltage Check (VTR DC-DC Converter)

Mode	E-E
Measuring Instrument	Digital voltmeter
SS 5V check	
Measurement Point	Pin ⑥ of CN005
Specified Value	4.90 ± 0.15 Vdc
VI 5V check	
Measurement Point	Pin ⑧ of CN005
Specified Value	4.85 ± 0.15 Vdc
AUDIO 5V check	
Measurement Point	Pin ⑪ of CN005
Specified Value	4.90 ± 0.15 Vdc
AUDIO D5V check	
Measurement Point	Pin ③ of CN005
Specified Value	4.90 ± 0.15 Vdc
AUDIO 8V check	
Measurement Point	Pin ① of CN004
Specified Value	8.0 ± 0.15 Vdc
EVF 5V check	
Measurement Point	Pin ③ of CN003
Specified Value	4.95 ± 0.15 Vdc

Checking method:

1) Each power supply voltage should meets the specified value.

Mode	Playback
Measuring Instrument	Digital voltmeter
DM 4.5V	
Measurement Point	Pin ① of CN002
Specified Value	4.40 ± 0.15 Vdc

Checking method:

1) DM4.5V power supply meets the specified value.

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENT

9-3-1. Battery Down Adjustment

Mode	CAMERA REC
Signal	Unnecessary
Adjustment Page	D
Adjustment Address	07

Connection:
1) Make this adjustment with MIC board, EVF board, and CAMERA block connected.
2) Connect the adjustment remote controller to the REMOTE terminal.
3) Connect the digital voltmeter so to measure the voltage of the regurated power supply unit connected to the battery terminal.

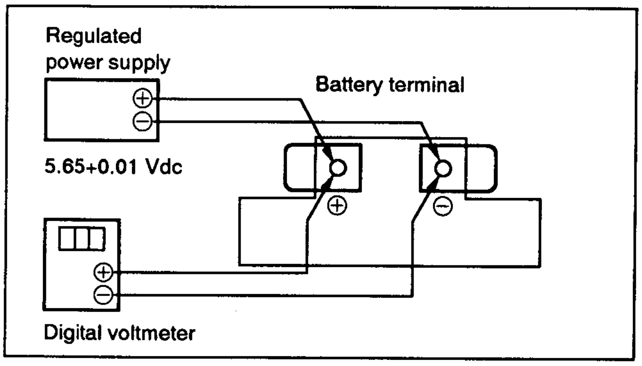
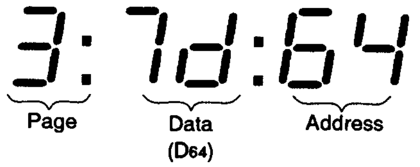


Fig. 9-5.

Adjusting method:
1) Set the POWER switch to CAMERA position.
2) Adjust the output voltage of the regurated power supply unit to be 6.5 ± 0.1 Vdc.
3) Set up the CAMERA REC mode.
4) Set the HOLD switch of the adjustment remote controller to the HOLD side.
5) Adjust the output voltage of the regurated power supply unit to be 5.65 ± 0.01 Vdc (battery terminal voltage).
6) Press three times the EDIT SEARCH (+) button of the adjustment remote controller to select page 3.
7) Select address 64.
   (Battery voltage display address)
8) Read the display data of the adjustment remote controller and set to D64.



9) Press six times the EDIT SEARCH (–) button of the adjustment remote controller. (Set the adjustment page to D.)
10) Select address 07 and set the data to D64.
11) Press the PAUSE button of the adjustment remote controller (Store the reference value in the memory.)
12) Turn off the POWER switch.

Checking method:
Remove the adjustment remote controller and check the following points. If the required conditions are not obtained, repeat the adjustments again.
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter reading becomes 6.5 ± 0.1 Vdc. (VTR in camera recording mode)
2) Confirm that the 🔋 mark is not lit on the EVF (viewfinder) screen (TALLY lamp is lit).
3) Lower the output voltage of the regulated power supply so that the digital voltmeter reading becomes 5.85 ± 0.01 Vdc.
4) Confirm that the 🔋 mark and the TALLY lamp are flashing in approx. 1 sec intervals on the EVF screen. (🔋 mark should not be blinking.)
   If not, slowly lower the power supply voltage to 5.65 ± 0.01 Vdc.
5) Lower the output voltage of the regulated power supply so that the digital voltmeter reading becomes 5.65 ± 0.01 Vdc.
6) Confirm that the flashing interval of the 🔋 mark and the TALLY lamp on the EVF screen becomes shorter, and that the VTR stops and the power is turned off.

9-3-2. Clock Accuracy Adjustment (SS-146P Board)

Mode	E-E
Measurement Point	Pin (69) of IC101 (check land "Xtal)"
Measuring Instrument	Frequency countor
Adjusting Element	CT101
Specified Value	512.004 ± 0.001 Hz

Adjusting method:
1) Adjust CT101 512.004 ± 0.001 Hz.

9-4. SERVO SYSTEM ADJUSTMENT

9-4-1. PWM Oscillating Frequency Adjustment (SS-146P Board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑩ of IC204
Measuring Instrument	Frequency counter
Adjustment Element	RV201
Specified Value	480 ± 2 kHz

Adjusting method:

1) Adjust RV201 to 480 ± 2 kHz.

9-4-2. Switching Position Adjustment (SS-146P Board)

Mode	Playback
Signal	Alignment tape : Operation check (WR5-1CP)
Measurement Point	CH1: MR-30 board Pin ② of CN802 (RF SWP) CH2: MR-30 board Pin ④ of CN802 (RF CH2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	05 04
Specified Value	t=0 ± 10 μsec

Adjusting method:

1) Set the HOLD switch of the adjustment remote controller to the HOLD side. (ADJUST MODE is set.)
2) Press three times the EDIT SEARCH (–) button of the adjustment remote controller. (Adjustment page D is set.)
3) Change the data at address 05 (for coarse adjustment) and minimize "t".
4) Press the PAUSE button of the adjustment remote controller to store the data in the memory.
5) Change the data at address 04 (for fine adjustment) and adjust to t=0 ± 10 μsec.
6) Press the PAUSE button of the adjustment remote controller
7) Turn off the POWER switch.

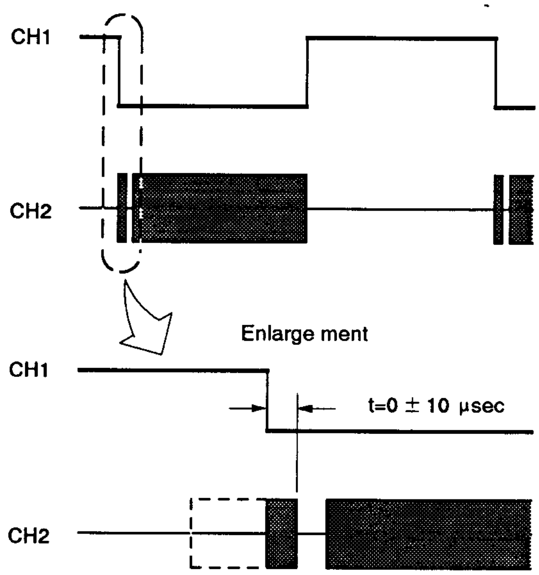


Fig. 9-6.

9-5. VIDEO SYSTEM ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure outlined below. The color video signal supplied from the pattern generator is utilized as the video input signal for video system adjustment in the recording mode. Make sure that the signal matches the specifications given in Fig. 9-3 and "Input Signal Confirmation".

Perform adjustment under following switch settings.

1. DIGITAL EFECT switch (S761 on DK-22P board)......OFF
2. Hi8 switch (S770 on DK-22P board)......AUTO
3. EDIT switch (S771 on DK-22P board)......OFF

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) Y comb filter adjustment
6) SYNC AGC and loop gain adjustment
7) VI-100 board VIDEO OUT level adjustment
8) PB emphasis adjustment
9) L mode PB Y level adjustment
10) E mode PB Y level adjustment
11) L mode Y FM carrier frequency, deviation adjustment
12) E mode Y FM carrier frequency, deviation adjustment
13) 375fH VCO adjustment
14) Chroma emphasis fo adjustment
15) Carrier balance adjustment
16) REC C RF Trap adjustment
17) fH VCO adjustment
18) GCA gain adjustment
19) Recording current adjustment
20) VIDEO OUT level adjustment
21) Y OUT level adjustment
22) C OUT level adjustment
23) Character generator fo adjustment
24) DDS character position adjustment

9-5-1. Playback Frequency Characteristics Adjustment (MR-30 Board)

Note: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape for frequency characteristics adjustment (WR5-7CE)
Measurement Point	Pin ③ of CN802 [Pin ④] External trigger: Pin ② (RF SWP) of CN802 Trigger slope: +, [–]
Measuring Instrument	Oscilloscope
Adjusting Element	RV802 [RV803]
Specified Value	When supposing the 4.5 MHz signal level as 3, 8.5 MHz signal level is 2 ± 0.2.

Adjusting method:

1) When supposing the 4.5 MHz signal level as 3, adjust RV802 [RV803] so that the 8.5 MHz signal level is 2 ± 0.2.

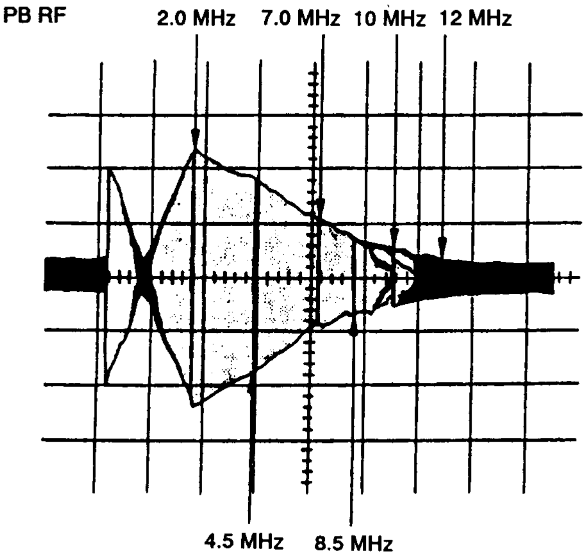


Fig. 9-10.

9-5-2. Flying Erase Check (MR-30 Board)

Mode	REC
Signal	Arbitrary
Measurement Point	TP804 (Pin ⑭ of CN801)
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8 ± 0.5 MHz Voltage: 7.0 ± 1.0 Vp-p

Checking method:

1) Insert a MP type cassette tape and then select the recording mode.
2) Confirm that the oscillation frequency is 8 ± 0.5 MHz and the oscillation voltage is 7.0 ± 1.0 Vp-p.

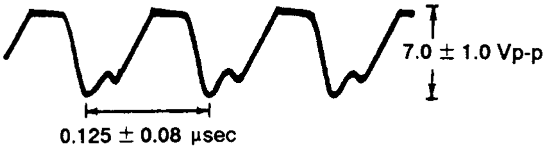


Fig. 9-11.

9-5-3. Crystal Oscillator fo Checking (VI-100 Board)

Mode	Playback
Signal	Alignment tape: For operation check
Measurement Point	Pin ⑭ of IC602
Measuring Instrument	Frequency counter
Adjusting Element	CV601
Specified Value	4433619 ± 50 Hz

Note: Connect the frequency counter through a buffer having high impedance (approx. 10MΩ) and low capacitance (less than 10 pF).

Checking method:

1) Adjust CV601 to 4433619 ± 50 Hz.

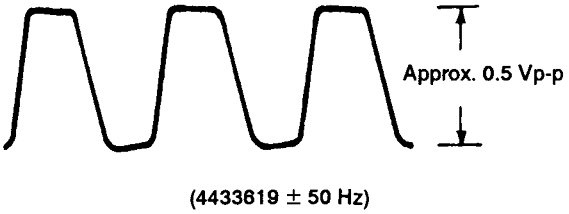


Fig. 9-12.

9-5-4. Y/C Separation Adjustment (HD-8P/VI-100 Board)

Mode	E-E
Signal	Color bar (VIDEO)
Measurement Point	Pin ㉖ of HD-8P board
Measuring Instrument	Oscilloscope
Adjusting Element	RV202 on HD-8P board LV601 on VI-100 board
Specified Value	Minimum residual chroma component

Connections:

1) Connect Q612 collector and GND with a jumper wire.
2) Connect Q613 emitter and base with a jumper wire.

Adjusting method:

1) Adjust RV202 (HD-8P board) and LV601 (VI-100 board) alternately so that the residual chroma component becomes minimum.

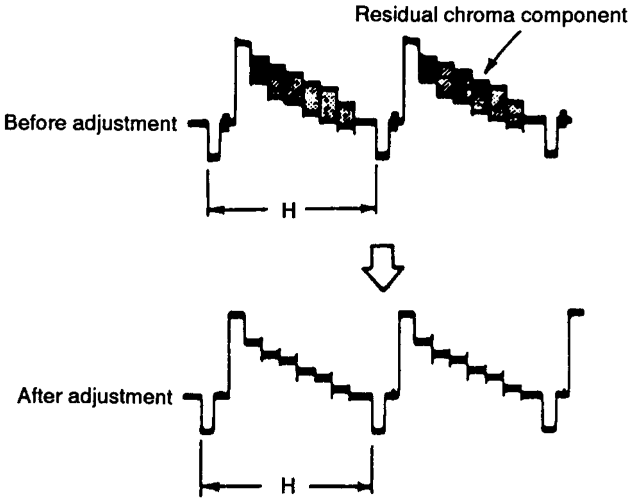


Fig. 9-13.

9-5-5. Y Comb Filter Adjustment (HD-8P/VI-100 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑨ of HD-8P board
Measuring Instrument	Oscilloscope
Adjusting Element	RV201 on HD-8P board
Specified Value	0 ± 20 mV

Connections:

1) Connect a 22 kΩ resister across Pin ⑨ of HD-8P board and a 10:1 probe in series.

Adjusting method:

1) Adjust RV201 so that the amplitude between white (100%) and the sync chip becomes minimum.

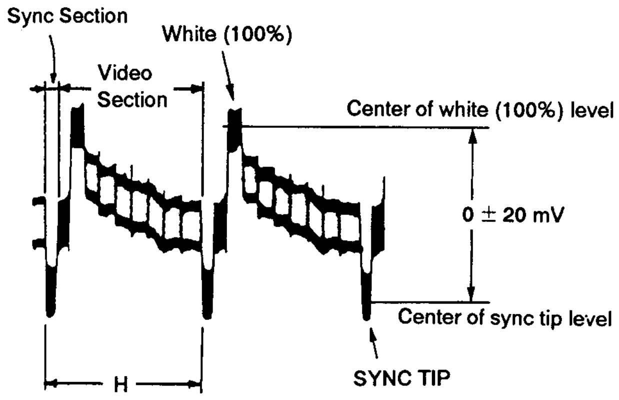

Sync Section
White (100%)
Video Section
Center of white (100%) level
0 ± 20 mV
Center of sync tip level
SYNC TIP
H

Fig. 9-14.

9-5-6. SYNC AGC and Loop Gain Adjustment

1. SYNC AGC adjustment (VI-100 board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ㊲ of IC410
Measuring Instrument	Oscilloscope
Adjusting Element	RV409
Specified Value	0.50 ± 0.01 Vp-p

Adjusting method:

1) Adjust RV409 to 0.50 ± 0.01 Vp-p.

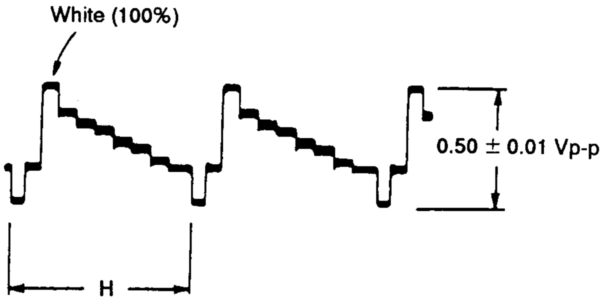

White (100%)
0.50 ± 0.01 Vp-p
H

Fig. 9-15.

2. Loop gain adjustment (VI-100 board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ㊴ of IC410 (Pin ㉚ of HD-8P board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV401
Specified Value	0.50 ± 0.02 Vp-p

Adjusting method:

1) Adjust RV410 to 0.50 ± 0.02 Vp-p.

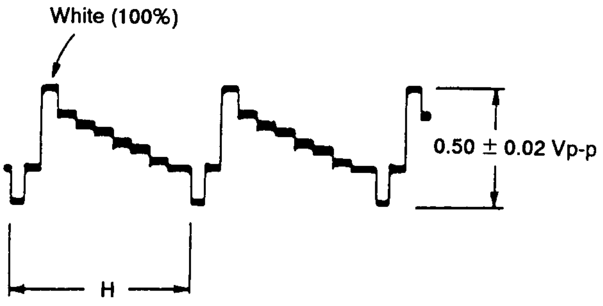

White (100%)
0.50 ± 0.02 Vp-p
H

Fig. 9-16.

9-5-7. VIDEO OUT Level Adjustment (VI-100 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ② (DI IN Y) of CN406
Measuring Instrument	Oscilloscope
Adjusting Element	RV410
Specified Value	1.00 ± 0.025 Vp-p

Adjusting method:

1) Adjust RV410 to 1.00 ± 0.025 Vp-p.

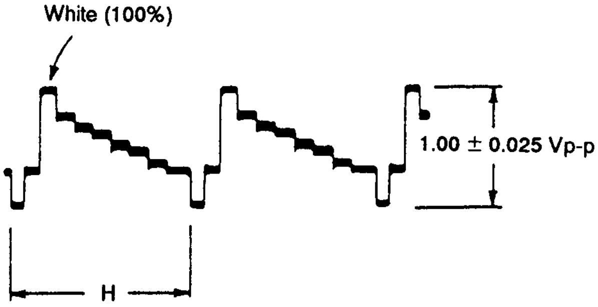


Fig. 9-17.

9-5-8. PB Emphasis Adjustment (VI-100 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP) Color bar section
Measurement Point	Pin ② (DI IN Y) of CN406
Measuring Instrument	Oscilloscope
Adjusting Element	RV408
Specified Value	Flat level: pedestal, sync chip and each luminance levels

Note: Make sure that EDIT switch (S771 on DK-22P board) is off.

Adjusting method:

1) Adjust RV408 to make flat the pedestal level, sync chip level and each luminance level.

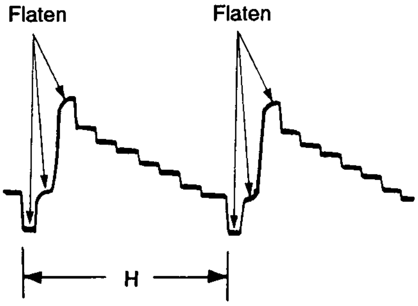


Fig. 9-18.

9-5-9. L Mode PB Y Level Adjustment (VI-100 Board)

Mode	Playback
Signal	Alignment tape: for operation check (WR5-5CSP) Color bar section
Measurement Point	Pin ② (DI IN Y) of CN406
Measuring Instrument	Oscilloscope
Adjusting Element	RV416
Specified Value	1.02 ± 0.025 Vp-p

Note: Make sure that EDIT switch (S771 on DK-22P board) is off.

Adjusting method:

1) Adjust RV416 to 1.02 ± 0.025 Vp-p.
2) Perform "E Mode PB Y Level Adjustment".

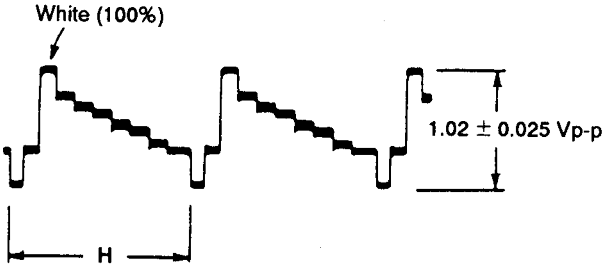


Fig. 9-19.

9-5-10. E Mode PB Y Level Adjustment (VI-100 Board)

Mode	Playback
Signal	Alignment tape: for operation check (WR5-8CSE) Color bar section
Measurement Point	Pin ② (DI IN Y) of CN406
Measuring Instrument	Oscilloscope
Adjusting Element	RV417
Specified Value	1.02 ± 0.025 Vp-p

Note: 1) Make sure that EDIT switch (S771 on DK-22P board) is off.
2) Confirm that "L Mode PB Y Level Adjustment" is completed.

Adjusting method:

1) Adjust RV417 to 1.02 ± 0.025 Vp-p.

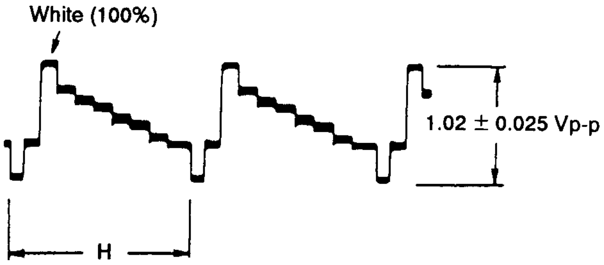


Fig. 9-20.

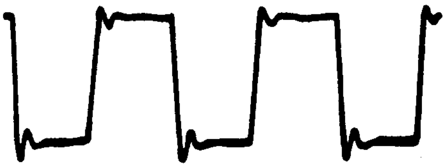
9-5-11. L Mode Y FM Carrier Frequency and Y FM Deviation Adjustment

Note: After this adjustment is completed, be sure to perform "E Mode Y FM Carrier Frequency and Y FM Deviation Adjustment".

1. L mode Y FM carrier frequency adjustment (VI-100 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑭ (REC Y RF) of IC409
Measuring Instrument	Frequency counter
Adjusting Element	RV406
Specified Value	4.38 ± 0.05 MHz

Adjusting method:
1) Insert a MP type cassette tape.
2) Adjust RV406 to 4.38 ± 0.05 MHz.
3) Be sure to perform "L Mode Y FM Deviation Adjustment".



4.38 ± 0.05 MHz

Fig. 9-21.

2. L mode Y FM deviation adjustment (VI-100 board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ② (DI IN Y) of CN406
Measuring Instrument	Oscilloscope
Adjusting Element	RV405
Specified Value	Playback level: 1.02 ± 0.05 Vp-p

Note: 1) Confirm that "VIDEO OUT Level Adjustment", "PB Y Level Adjustment" and "L Mode Y FM Carrier Frequency Adjustment" are completed.
2) Make sure that EDIT switch (S771 on DK-22P board) is off.

Adjusting method:
1) Insert a MP type cassette tape.
2) Record the color bar signal.
3) Play back the recorded signal.
4) Check the playback output level.
Specified value: 1.02 ± 0.05 Vp-p
5) If the specified value is not satisfied, rotate RV405 as below and then repeat steps 1) through 3).

	RV405 rotating direction
More than spec.	Counterclockwise (↺)
Less than spec.	Clockwise (↻)

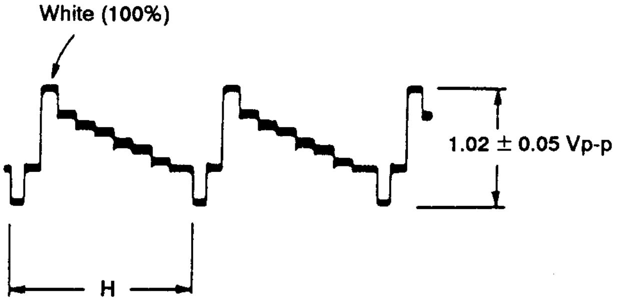


Fig. 9-22.

9-5-12. E Mode Y FM Carrier and Y FM Deviation Adjustment

Note: 1) Confirm that "L Mode Y FM Carrier Frequency and Y FM Deviation Adjustment" is completed.
2) Before adjustment, check below:
1. Make sure that Hi8 switch (E mode/L mode select switch: S770 on DK-22P board) is set to AUTO position (E mode side).

1. E mode Y FM carrier frequency adjustment (VI-100 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑭ (REC Y RF) of IC409
Measuring Instrument	Frequency counter
Adjusting Element	RV407
Specified Value	5.99 ± 0.05 MHz

Adjusting method:
1) Insert a ME type cassette tape.
2) Adjust RV407 to 5.99 ± 0.05 MHz.
3) Be sure to perform "E Mode Y FM Deviation Adjustment".

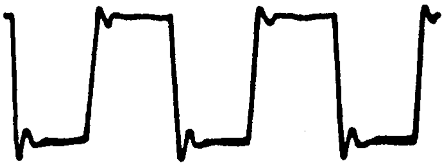


Fig. 9-23.

2. E mode Y FM deviation adjustment (VI-100 board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ② (DI IN Y) of CN406
Measuring Instrument	Oscilloscope
Adjusting Element	RV404
Specified Value	Playback level: 1.02 ± 0.05 Vp-p

Note: 1) Confirm that "VIDEO OUT Level Adjustment", "PB Y Level Adjustment" and "E Mode Y FM Carrier Frequency Adjustment".
2) Make sure that EDIT switch (S771 on DK-22P board) is off.

Adjusting method:
1) Insert a ME type cassette tape.
2) Record the color bar signal.
3) Play back the recorded signal
4) Check the playback output level.
Specified value: 1.02 ± 0.05 Vp-p
5) If the specified value is not satisfied, rotate RV404 as below and then repeat steps 1) through 3).

	RV404 rotating direction
More than spec.	Counterclockwise (↺)
Less than spec.	Clockwise (↻)

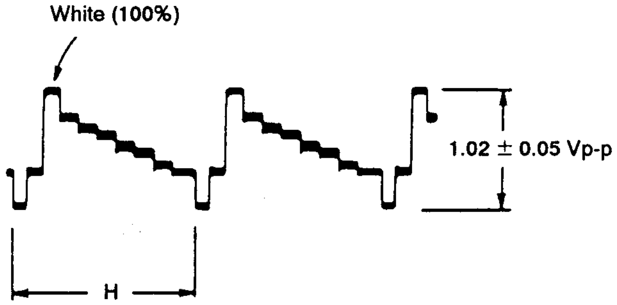


Fig. 9-24.

9-5-13. 375 fH VCO Adjustment (VI-100 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㉖ of IC602
Measuring Instrument	Digital voltmeter
Adjusting Element	RV602
Specified Value	3.0 ± 0.4 Vdc

Adjusting method:
1) Adjust RV602 to 3.0 ± 0.4 Vdc.

9-5-14. Chroma Emphasis Adjustment (VI-100 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Pin ㊹ of IC602 (or Pin ⑪ of IC601)
Measuring Instrument	Oscilloscope
Adjusting Element	FL603
Specified Value	Be sure to confirm that the fo component is minimum and zero cross apears between green and magenta.

Connections:

1) Connect as shown below and input 2.5 Vdc to Pin ㊼ (ACC ADJ) of IC602.

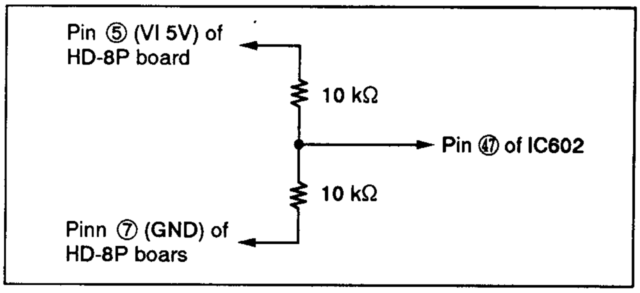


Fig. 9-25.

Adjusting method:

1) Adjust with FL603 so that the amplitude of the flat cyan portion of the chroma signal becomes minimum.
   At this point, be sure to confirm that the zero cross appears between the green and magenta.

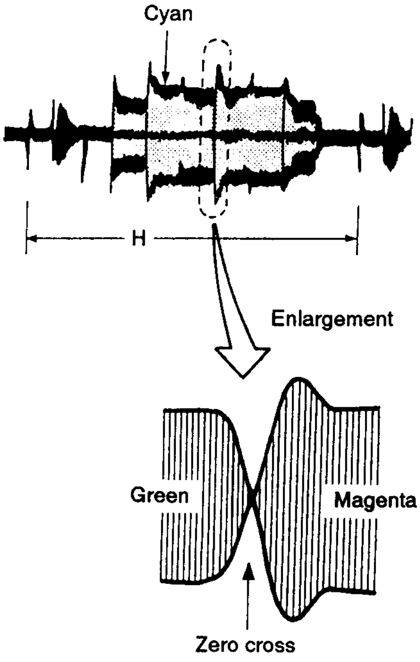


Fig. 9-26.

9-5-15. Carrier Balance Adjustment (VI-100 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㊵ of IC602
Measuring Instrument	Oscilloscope
Adjusting Element	RV601
Specified Value	Minimum 5.17 MHz component

Adjusting method:

1) Adjust RV601 to minimize the 5.17 MHz component.

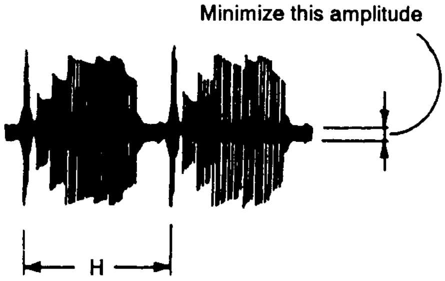


Fig. 9-27.

9-5-16. REC C RF Trap Adjustment (VI-100 Board)

Mode	E-E
Signal	No signal
Measurement Point	Q601 (emiter) (REC C RF)
Measuring Instrument	Oscilloscope
Adjusting Element	CV602
Specified Value	Minimize Ⓐ (Less than 50 mVp-p)

Connections:

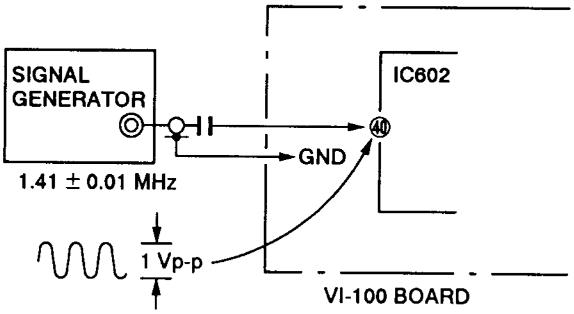


Fig. 9-28.

Adjusting method:

1) Adjust to minimize Ⓐ with CV602.

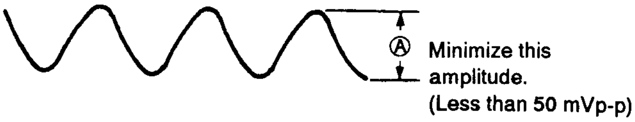


Fig. 9-29.

9-5-17. GCA GAIN Adjustment (VI-100 Board)

Mode	Playback and playback pause
Signal	Alignment tape: For operation check (WR5-5CSP) Colour bar section
Measurement Point	Pin ⑤ of IC603
Measuring Instrument	Oscilloscope
Adjusting Element	RV603
Specified Value	Vb=(Va–40) ± 15 mVp-p Va: Peak level of burst signal at playback mode Vb: Peak level of burst signal at playback pause mode

Adjusting method:

1) Set to playback mode.
2) Measure the peak level of burst signal.
3) Set to playback pause mode.
4) Adjust RV603 so that the peak level of burst signal is lower 40 mV than Va.

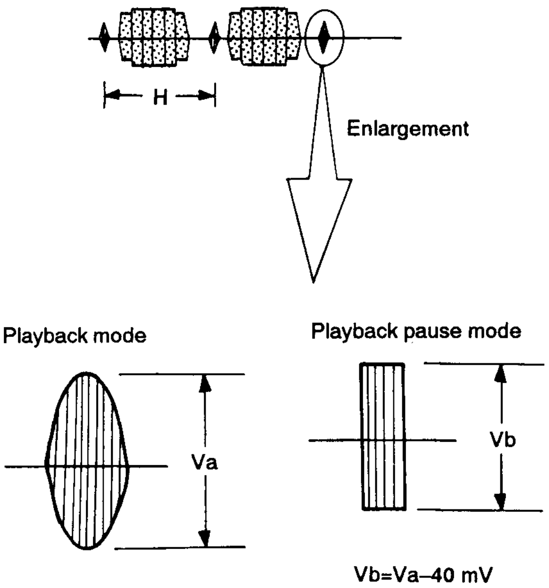

H
Enlargement
Playback mode
Playback pause mode
Va
Vb
Vb=Va–40 mV

Fig. 9-30.

9-5-18. fH VCO Adjustment (VI-100 Board)

Mode	E-E
Signal	Colour bar (VIDEO)
Measurement Point	CH1: Pin ⑬ of IC603 CH2: Pin ⑥ of CN901 (VIDEO IN)
Measuring Instrument	Oscilloscope
Adjusting Element	RV604
Specified Value	14.5 ± 0.2 µsec

Adjusting method:

1) Adjust RV604 so that the TR of CH1 is 14.5 ± 0.2 µsec.
2) Confirm that the H (time) of CH1 and CH2 is stable.

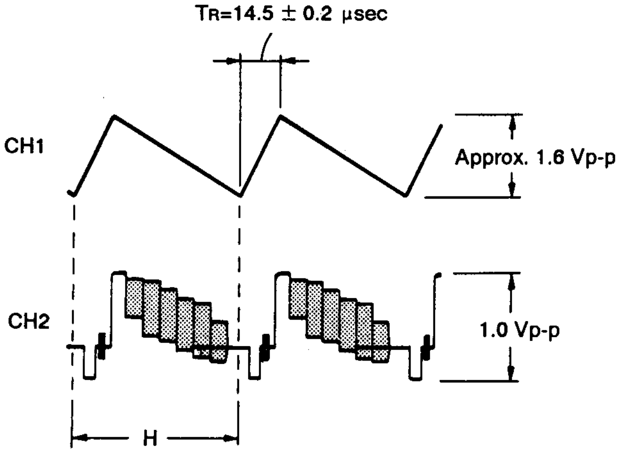

TR=14.5 ± 0.2 µsec
CH1
Approx. 1.6 Vp-p
CH2
1.0 Vp-p
H

Fig. 9-31.

9-5-19. Recording Current Adjustment

Note: Perform adjustment in the E mode with using a ME type tape. Check the following two points before adjustment:

1. Make sure that Hi8 switch (E mode/L mode select switch: S770 on DK-22P board) is set to AUTO position (E mode side).
2. Make sure that SP/LP switch (S769 on DK-22P board) is set to LP position.
3. When performing adjustment other than "REC PCM recording current adjustment", disconnect CN303 on the PC-52P board for prevention of the effect to PCM audio system.

1. REC Y recording current adjustment (MR-30 board)

Mode	Recording (LP mode)
Signal	No signal
Measurement Point	TP802 (Pin ⑳ of HR-3P board: CH1 CHECK)
Measuring Instrument	Oscilloscope
Adjusting Element	RV806
Specified Value	180 ± 10 mVp-p

Note: After this adjustment is completed, be sure to perform "REC C", "REC AFM" and "REC ATF" recording current adjustments.

Adjusting method:

1) Insert a ME type cassette tape and select the recording mode.
2) Adjust RV806 to 180 ± 10 mVp-p.

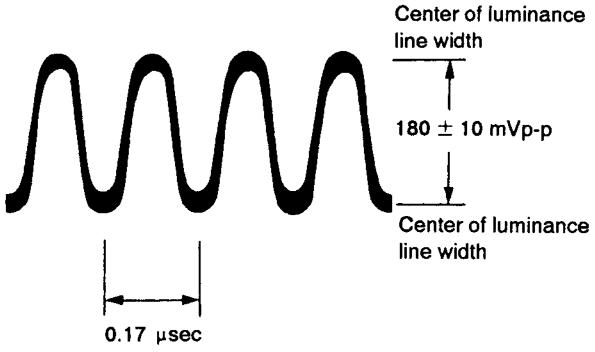


Fig. 9-32.

2. REC C recording current adjustment (MR-30 board)

Mode	Recording (LP mode)
Signal	Color bar (S VIDEO)
Measurement Point	TP802 (Pin ⑳ of HR-3P board: CH1 CHECK)
Measuring Instrument	Oscilloscope
Adjusting Element	RV805
Specified Value	50 ± 5 mVp-p

Note: After this adjustment is completed, be sure to perform "REC AFM" and "REC ATF" recording current adjustments.

Connections:

1) Connect following three sections with a jumper wire.
   - Pin ⑨ (REC Y RF) of CN804 on the MR-30 board and Pin ⑧ (REG 5V)
   - Pin ⑯ (REC ATF) of CN307 on the PC-52P board and GND.
2) Disconnect CN701 on the AS-22P board.

Adjusting method:

1) Insert a ME type cassette tape and select the recording mode.
2) Adjust RV805 to 50 ± 5 mVp-p.

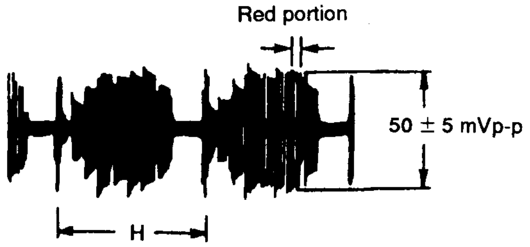


Fig. 9-33.

3. REC AFM recording current adjustment (AS-22P board)

Mode	Recording (LP mode)
Signal	No signal
Measurement Point	TP802 on MR-30 board (Pin ⑳ of HR-3P board: CH1 CHECK)
Measuring Instrument	Oscilloscope
Adjusting Element	RV713
Specified Value	15 ± 1.5 mVp-p

Note: If the signal level at TP802 is not enough to read, connect directly to a 100Ω resister without a 10:1 probe, as shown below.

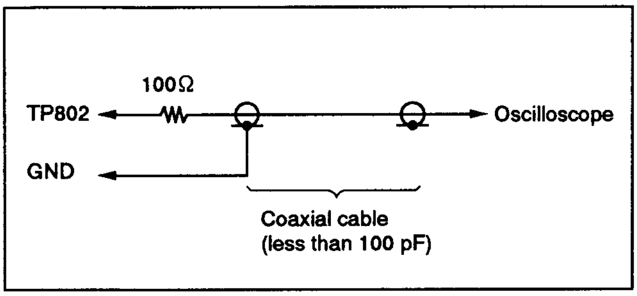

100Ω
TP802
GND
Oscilloscope
Coaxial cable
(less than 100 pF)

Fig. 9-34.

Connections:

1) Connect following three sections with a jumper wire.
- Pin ⑨ (REC Y RF) of CN804 on the MR-30 board and Pin ⑧ (REG 5V)
- Pin ⑯ (REC ATF) of CN307 on the PC-52P board and GND.
- Pin ⑩ (1.7 MHz CARRIER $\overline{\text{ON}}$/OFF) of CN702 on the AS-22P board and Pin ⑤ (AFM 5V)

Adjusting method:

1) Insert a ME type cassette tape and select the recording mode.
2) Adjust RV713 to 15 ± 1.5 mVp-p.

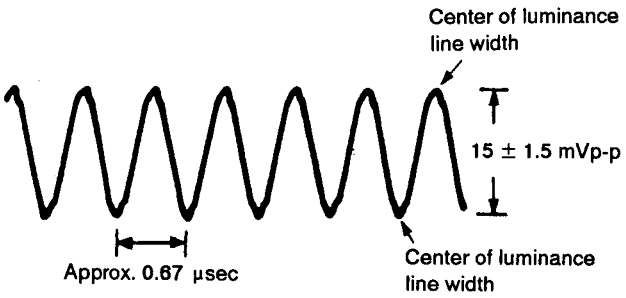

Center of luminance line width
15 ± 1.5 mVp-p
Approx. 0.67 μsec
Center of luminance line width

Fig. 9-35.

4. REC ATF recording current confirmation (MR-30 board)

Mode	Recording (LP mode)
Signal	No signal
Measurement Point	TP802 on the MR-30 board (Pin ⑳ of HR-3P board: CH1 CHECK)
Measuring Instrument	Oscilloscope
Specified Value	12 ± 5 mVp-p

Note: If the signal level at TP802 is not enough to read, connect directly to a 100Ω resister without a 10:1 probe, as shown below.

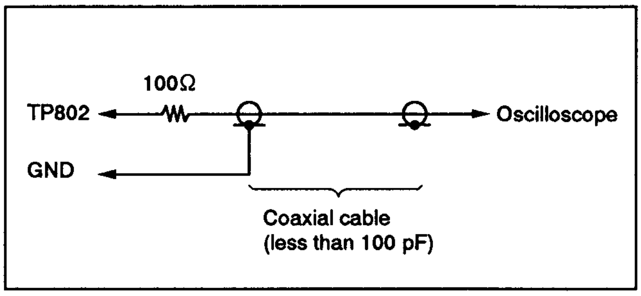

100Ω
TP802
GND
Oscilloscope
Coaxial cable
(less than 100 pF)

Fig. 9-36.

Connections:

1) Connect following two sections with a jumper wire.
   - Pin ⑨ (REC Y RF) of CN804 on the MR-30 board and Pin ⑧ (REG 5V)
2) Disconnect CN701 on the AS-22P board.

Adjusting method:

1) Insert a ME type cassette tape and select the recording mode.
2) Confirm that the REC ATF level is 12 ± 5 mVp-p.

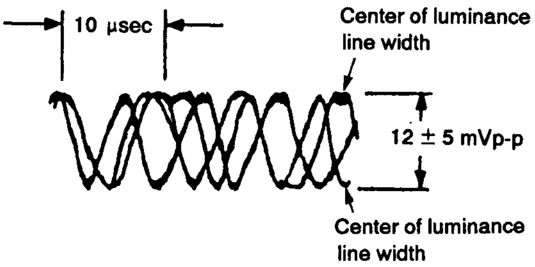

10 μsec
Center of luminance line width
12 ± 5 mVp-p
Center of luminance line width

Fig. 9-37.

5. REC PCM recording current adjustment (PC-52P board)

Mode	Recording (LP mode)
Signal	No signal
Measurement Point	TP802 on MR-30 board (Pin ⑳ of HR-3P board: CH1 CHECK)
Measuring Instrument	Oscilloscope
Adjusting Element	RV307
Specified Value	150 ± 15 mVp-p

Note: Confirm that CN303 of the PC-52P board is connected.

Connections:

1) Connect TP805 (Base of Q837) and TP806 (Collector of Q837) on the MR-30 board with a jumper wire.

Adjusting method:

1) Insert a ME type cassette tape and select the recording mode.
2) Adjust RV307 to 150 ± 15 mVp-p.

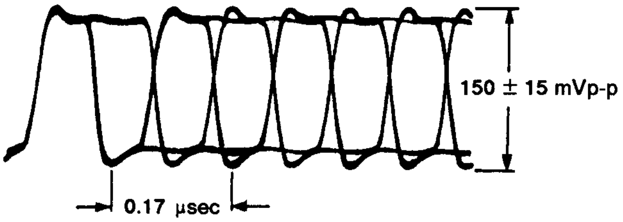


Fig. 9-38.

9-5-20. VIDEO OUT Level Adjustment (PJ-22P Board)

Mode	E-E
Signal	Color bar (VIDEO)
Measurement Point	J904 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV901
Specified Value	1.00 ± 0.025 Vp-p

Note: J904 (VIDEO OUT) must be terminated at 75Ω .

Adjusting method:

1) Adjust RV901 to 1.00 ± 0.025 Vp-p.

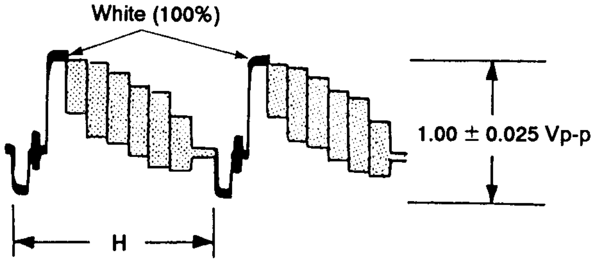


Fig. 9-39.

9-5-21. Y OUT Level Adjustment (PJ-22P Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Y signal terminal (Pin ③) of J903 (S VIDEO OUT).
Measuring Instrument	Oscilloscope
Adjusting Element	RV902
Specified Value	1.00 ± 0.025 Vp-p

Connections:

1) Terminate the Y signal terminal (Pin ③) of J903 at 75Ω .
2) Connect Pin ⑤ (S POWER SAVE) and GND with a jumper wire.

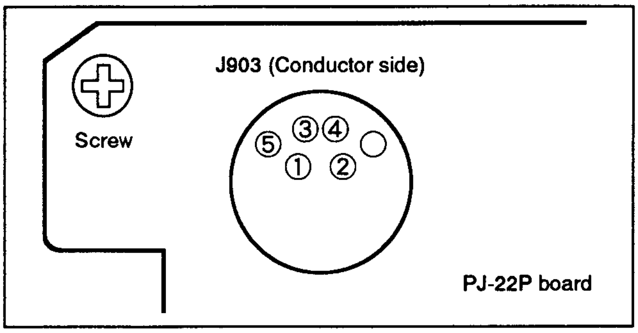


Fig. 9-40.

Adjusting method:

1) Adjust RV902 to 1.00 ± 0.025 Vp-p.

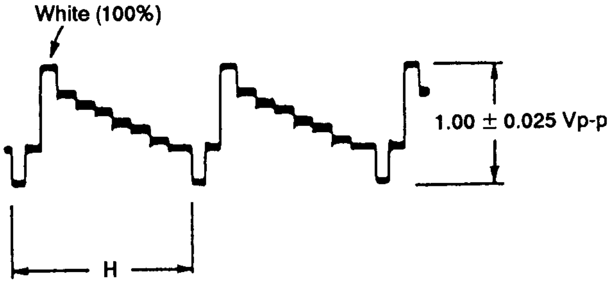


Fig. 9-41.

9-5-22. C OUT Level Adjustment (PJ-22P Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement Point	Chroma signal terminal (Pin ④) of J903 (S VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV903
Specified Value	0.300 ± 0.007 Vp-p

Connections:

1) Terminate the chroma signal terminal (Pin ④) of J903 at 75Ω .
2) Connect Pin ⑤ (S POWER SAVE) and GND with a jumper wire.

Adjusting method:

1) Adjust the burst level with RV903 to 0.300 ± 0.007 Vp-p.

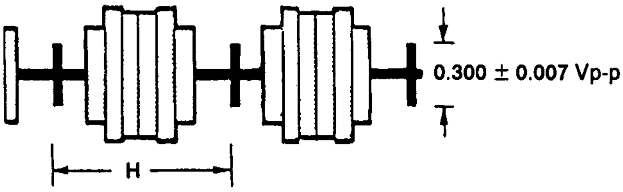


Fig. 9-42.

9-5-23. Character Generator fo Adjustment (VI-100 Board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑲ of IC407
Measuring Instrument	Frequency counter
Adjusting Element	CV401
Specified Value	15625 ± 50 Hz

Adjusting method:

1) Adjust CV401 to 15625 ± 50 Hz.

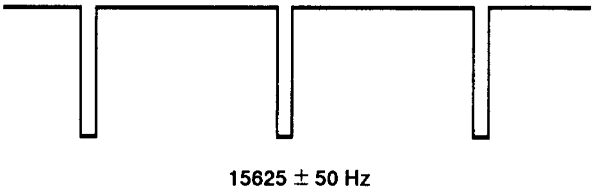


Fig. 9-43.

9-5-24. DDS Character Position Adjustment (VI-100 Board)

Mode	Playback (data screen: ON)
Signal	Alignment tape for operation check Color bar section
Measurement Point	Monitor TV screen
Measuring Instrument	Monitor TV
Adjusting Element	CV402
Specified Value	Left inner contour of the number at the right side of the count indication is lined up with the border line between the red and blue color bars.

Adjusting method:

1) Turn on the data screen by DATA SCREEN button (S741 on VK-25P board).
2) Adjust CV402 until the left inner contour of the number at the right side of the count indication is lined up with the border line between the red and blue color bars.

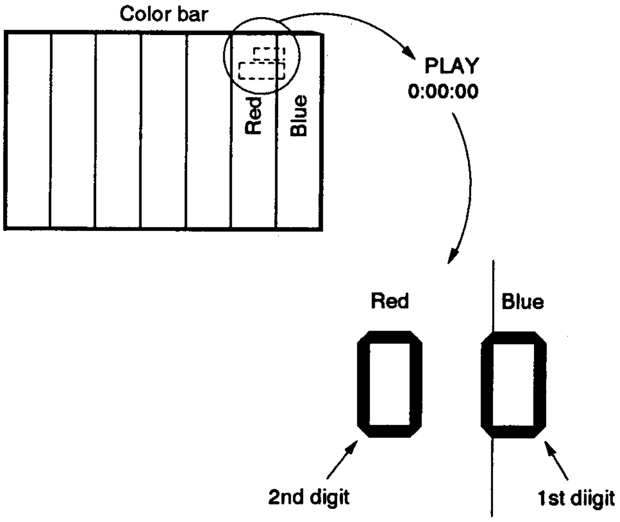


Fig. 9-44.

9-6. DIGITAL PICTURE SYSTEM ADJUSTMENT

Set the switches to the following positions.

- POWER (CAMERA/OFF/VTR) switch (S743 on VK-25P board)......CAMERA
- +VTR switch (S745 on VK-25P board)......ON
- DIGITAL EFECT switch (S761 on DK-22P board)......ON
- EFECT LEVEL selector (S215 on FD-45P board)......3

[Input signals]

Remove CN604 on the DI-21P board and input the Y signal from the pattern generator. At this time, connect the oscilloscope to Pin ③ of CN604, and confirm that the Y signal level is 1 Vp-p and that there are no chroma and burst signals.

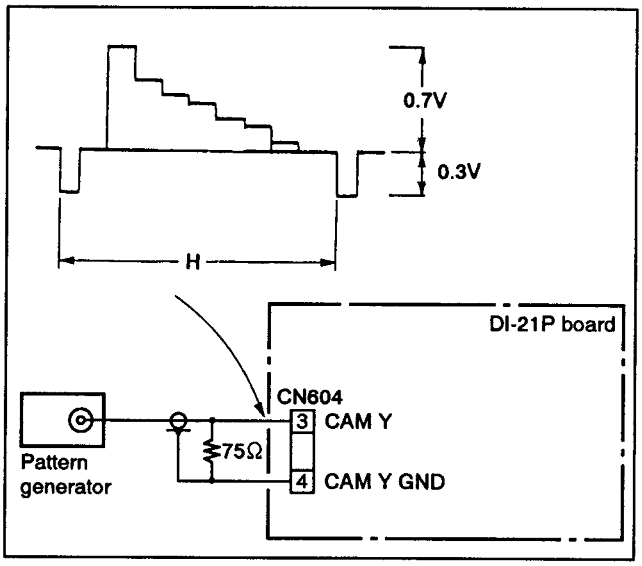


Fig. 9-45.

9-6-1. AFC Adjustment (DI-21P Board)

Mode	Playback
Signal	Arbitrary
Measurement Point	TP603 (Pin ⑰ of IC704: YWCK)
Measuring Instrument	Frequency counter
Adjusting Element	VC701
Specified Value	14.218750 MHz ± 50 kHz

Connections:

1) Connect Pin ⑤ (VIDEO IN) of IC704 and Pin ⑬ (DM 4.4V) of IC708 with a jumper wire.
2) Connect Pin ⑩ (PWM) and Pin ⑪ (PEO) of IC704 with a jumper wire.

Adjusting method:

1) Adjust VC701 so that the Y signal write clock (YWCK) free run frequency becomes 14.218750 MHz ± 50 kHz.

9-6-2. APC Adjustment (DI-21P Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP) Color bar section
Measurement Point	TP606 (Pin ㊻ of IC701: CWCK)
Measuring Instrument	Frequency counter
Adjusting Element	VC704
Specified Value	17.734750 MHz ± 50 Hz

Connections:

1) Connect Pin ⑲ (chroma signal input) and Pin ⑳ (GND) of IC709 with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:

1) Adjust VC704 so that the chroma signal write clock (CWCK) free run frequency becomes 17.734750 MHz ± 50 Hz.

9-6-3. V-PLL Adjustment (DI-21P Board)

Mode	Playback
Signal	Arbitrary
Measurement Point	TP609 (Pin (119) of IC703: YRCK)
Measuring Instrument	Frequency counter
Adjusting Element	VC702
Specified Value	14.218750 MHz ± 200 Hz

Adjusting method:

1) Adjust VC702 so that the Y signal write clock (YRCK) frequency becomes 14.218750 MHz ± 200 Hz.

9-6-4. Encoder Adjustment (DI-21P Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP) Color bar section
Measurement Point	TP607 (Pin ⑨ of IC711: CLOCK)
Measuring Instrument	Frequency counter
Adjusting Element	VC703
Specified Value	17.734475 MHz ± 250 Hz

Adjusting method:

1) Adjust VC703 so that the frequency becomes 17.734475 MHz ± 250 Hz.

9-6-5. D/A SYNC Level Adjustment (DI-21P Board)

Mode	Camera E-E
Signal	Color bar signal (with chroma signal and burst signal being OFF)
Measurement Point	Pin ③ of CN602
Measuring Instrument	Oscilloscope
Adjusting Element	RV603
Specified Value	A=a ± 10 mV

Adjusting method:

1) Press CLEAR (DIGITAL EFECT CLEAR) button (S765 on DK-22P board).
2) Read the through signal sync level (a).
3) Press FLASH MOTION button (S763 on DK-22P board).
4) Adjust RV603 so that the memory read-out signal sync level (A) becomes a ± 10 mV.

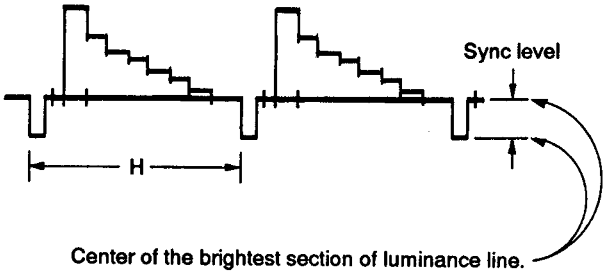


Fig. 9-46.

9-6-6. A/D White Level Adjustment (DI-21P Board)

Mode	Camera E-E
Signal	Color bar signal (with chroma and burst signals being OFF)
Measurement Point	Pin ③ of CN602
Measuring Instrument	Oscilloscope
Adjusting Element	RV602
Specified Value	B=b ± 10 mV

Adjusting method:

1) Press CLEAR (DIGITAL EFECT CLEAR) button (S765 on DK-22P board).
2) Read the through signal white level (b).
3) Press FLASH MOTION (S763 on DK-22P board) button.
4) Adjust RV602 so that the memory read-out white level (B) becomes b ± 10 mV.

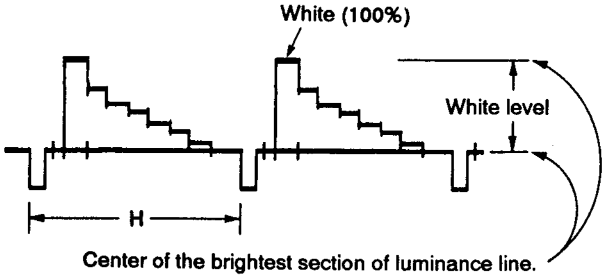


Fig. 9-47.

9-7. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with using the color bar signal as a video input signal.

[Connection of audio system measuring instruments]

In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below.

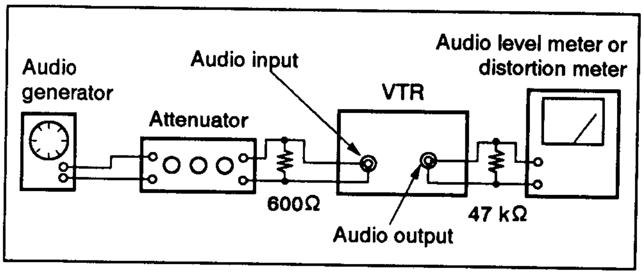

Audio generator
Audio input
Audio level meter or distortion meter
VTR
Attenuator
600Ω
47 kΩ
Audio output

Fig. 9-48.

9-7-1. PCM Audio System Adjustment

Unless otherwise specified, the switches or controls are set to the following positions for adjustments.

- AUDIO MONITOR (DIGITAL/HIFI) switch (S902 on PJ-22P board)......DIGITAL (PCM)
- AUDIO MONITOR (STEREO/MAIN/SUB) switch (S801 on LI-12P board)......STEREO
- AGC switch (S220 on FD-45P board)......OFF
- REC LEVEL control (RV211 on FD-45P board)...Position 10
- BALANCE control (RV212 on FD-45P board)......Mechanical center

Note: In adjustments which is performed for both R and L channels, the adjusting element for R channel is shown in parentheses [ ].

[Adjustment procedure]

1) Audio 5V adjustment
2) PCM master clock adjustment
3) PCM playback VCO free oscillation frequency adjustment
4) PCM playback level adjustment
5) E-E output level check
6) Level meter adjustment
7) PCM off-set adjustment
8) PCM recording level adjustment
9) Overall frequency characteristics check
10) Overall distortion check
11) Overall noise level check

1. AUDIO 5V adjustment (PC-52P board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Q602 collector
Measuring Instrument	Digital voltmeter
Adjusting Element	RV311
Specified Value	5.0 ± 0.1 Vdc

Adjusting method:

1) Adjust RV311 to 5.0 ± 0.1 Vdc.

2. PCM master clock adjustment (PC-52P board)

Mode	Recording
Signal	No signal
Measurement Point	Pin ㉑ (MCKO) of IC321
Measuring Instrument	Frequency counter
Adjusting Element	CV422
Specified Value	11.50 ± 0.01 MHz

Connections:

1) Desolder the slit land of Pin (89) (TEST 4) of IC321 to open. Then connect Pin (89) of IC321 and the 5V power supply (Q326 collector) with a jumper wire.
2) Connect Pins ㉖ and ㉗ of IC321 with a jumper wire.

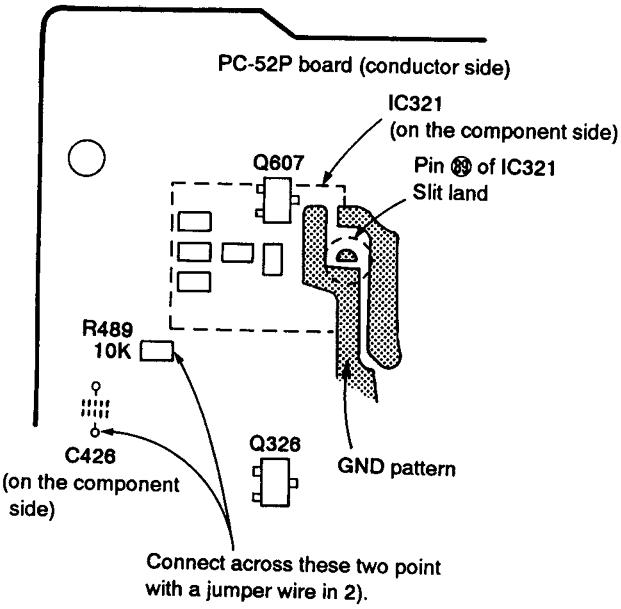

PC-52P board (conductor side)
IC321
(on the component side)
Q607
Pin (89) of IC321
Slit land
R489
10K
C426
(on the component side)
Q326
GND pattern
Connect across these two point with a jumper wire in 2).

Fig. 9-49.

Adjusting method:

1) Adjust CV422 so that the clock frequency becomes 11.50 ± 0.01 MHz.

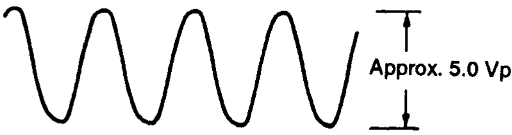


Fig. 9-50.

3. PCM playback VCO free oscillation frequency adjustment (PC-52P board)

Mode	Playback
Signal	Arbitrary
Measurement Point	Pin ⑧ of IC324
Measuring Instrument	Frequency counter
Adjusting Element	RV306
Specified Value	11.50 ± 0.02 MHz

Connections:
1) Remove CN303.
2) Connect Pin ① of IC324 and Pin ⑦ of IC324 (5V) with a jumper wire.

Adjusting method:
1) Adjust RV306 to 11.50 ± 0.02 MHz.

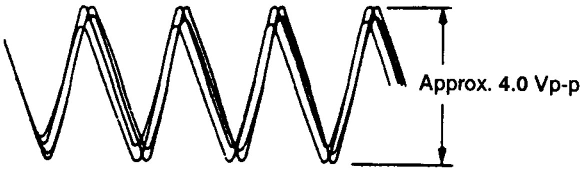


Fig. 9-51.

4. PCM playback level adjustment (PC-52P board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP) 400 Hz (Monoscope) section
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Adjusting Element	RV303
Specified Value	-7.5 ± 0.2 dBs

Adjusting method:
1) Adjust RV303 so that the 400 Hz signal level becames -7.5 ± 0.2 dBs.

Note: If there is a level difference between L and R channels, adjust to the central value.

5. E-E output level check

Mode	E-E
Signal	1 kHz, -7.5 dBs: AUDIO IN terminal L [R]
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Specified Value	-7.5 ± 2.0 dBs

Checking method:
1) Set REC LEVEL control to the position 7. (align green marks of REC LEVEL control and the cabinet).
2) Confirm that AUDIO OUT terminal L [R] level is -7.5 ± 2.0 dBs.

6. Level meter adjustment (PC-52P board)

Mode	E-E
Signal	400 Hz, -10 dBs: AUDIO IN terminal L [R]
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Adjusting Element	RV304 [RV305]
Specified Value	Level meter of the video camera recorder unit indicates -10 dBs.

Adjusting method:
1) Adjust REC LEVEL control so that the AUDIO OUT terminal L [R] signal level becomes -10 dBs.
2) Adjust RV304 [RV305] so that the level meter L [R] of the video camera recorder unit indicates -10 dB.

7. PCM off-set adjustment (PC-52P board)

Mode	Recording
Signal	No signal
Measurement Point	CH1: Pin ㉘ (ADDA) of IC314 CH2: Pin ㉗ (WCK) of IC314
Measuring Instrument	Oscilloscope
Adjusting Element	RV310 [RV309]
Specified Value	Upper and lower luminance line brightness is equal.

Note: Since there is a correlation between L and R channels, be sure to adjust these two channels alternately.

Adjusting method:

1) Set REC LEVEL control to minimum (0) position.
2) Adjust RV310 [RV309] so that the upper and lower luminance lines brightness become equal.

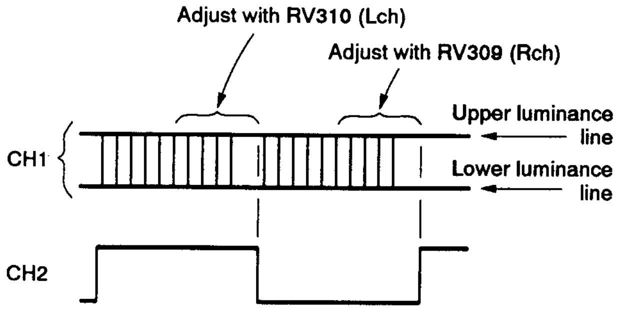


Fig. 9-52.

8. PCM Recording level adjustment (PC-52P board)

Mode	Self-recording and playback
Signal	1 kHz, –7.5 dBs: AUDIO IN terminal L [R]
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Adjusting Element	RV301 [RV302]
Specified Value	–7.5 ± 0.5 dBs

Note: Confirm that "PCM playback level adjustment" is completed.

Adjusting method:

1) Select the E-E mode.
2) Set the AUDIO OUT terminal L [R] output level to –7.5 dBs with REC LEVEL control.
3) Record the signal.
4) Play back the recorded section.
5) Confirm that the AUDIO OUT terminal L [R] output level is –7.5 ± 0.5 dBs.
6) If the specification is not satisfied, adjust RV301 [RV302] and then repeat steps 1) through 5).
   The signal level at Pin ⑬ [Pin ⑯] of IC314 in the recording is proportional to the output level in the playback mode*1. This adjustment can be made comparatively easy by turning the adjustment control while measuring the signal level at this point with the oscilloscope.
   *1: Since the signal will be subjected to logarithmic compressing, it is not linear proportion.

9. Overall frequency characteristics check

Mode	Self-recording and playback
Signal	Ⓐ400 Hz, –20 dBs Ⓑ20 Hz, –20 dBs Ⓒ13 kHz, –20 dBs AUDIO IN terminal L [R]
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Specified Value	With the 400 Hz playback output level as 0 dB, the playback output level of 20 Hz is 0^{+2}_{-1} dB and that of 13 kHz is 0^{+1}_{-3} dB

Checking method:

1) Set the AUDIO OUT terminal L [R] output level to –20 dBs with REC LEVEL control.
2) Record signals Ⓐ through Ⓒ in the order.
3) Playback the recorded sections.
4) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 20 Hz is 0^{+2}_{-1} dB and that of 13 kHz is 0^{+1}_{-3} dB.

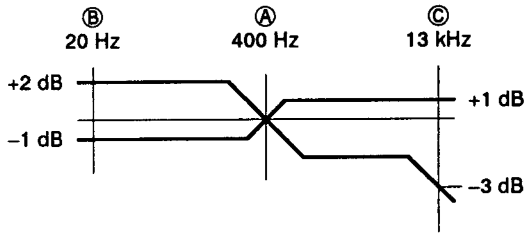


Fig. 9-53.

10. Overall distortion check

Mode	Self-recording and playback
Signal	1 kHz, –7.5 dBs: AUDIO IN terminal L [R]
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5%*[1]

Checking method:

1) Set the AUDIO OUT terminal L [R] output level to –7.5 dBs with REC LEVEL control.
2) Record the signal.
3) Playback the recorded section.
4) Confirm that the distortion is less than 0.5% *[1].

*1 Value when 200 Hz to 6 kHz BPF (18 dB/OCT) is used.

11. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal (shorting plug is inserted into AUDIO IN L and R terminals)
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Adjusting Element	Less than –78.5 dBs *[2]

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –78.5 dBs *[2].

*2 Value when IHF-A hearing correction filter is used.

9-7-2. AFM Audio System Adjustment

Unless otherwise specified, the switches or controls are set to the following positions for adjustments.

- AUDIO MONITOR (DIGITAL/HIFI) switch (S902 on PJ-22P board)......HIFI (AFM)
- AUDIO MONITOR (STEREO/MAIN/SUB) switch (S801 on LI-12P board)......STEREO
- AGC switch (S220 on FD-45P board)......OFF
- REC LEVEL control (RV211 on FD-45P board)......Position 10
- BALANCE control (RV212 on FD-45P board)......Mechanical center
- NARRATION mic......Be sure not to be used
- MONO MIC jack (J863 on HJ-11P board)......Be sure nothing to be connected.

Note: In adjustments which is performed for both R and L channels, the adjusting element for R channel is shown in parentheses [ ].

[Adjusting procedure]

1) 1.5 MHz carrier frequency adjustment
2) 1.7 MHz carrier frequency adjustment
3) Recording current ratio adjustment
4) E-E output level check
5) 1.5 MHz deviation adjustment
6) 1.7 MHz deviation adjustment
7) REC matrix L+R adjustment
8) REC matrix L–R adjustment
9) PB matrix L adjustment
10) PB matrix R adjustment
11) Overall level adjustment, separation check
12) Overall distortion check
13) Overall noise level check

1. 1.5 MHz carrier frequency adjustment (AS-22P board)

Mode	Recording
Signal	No signal
Measurement Point	Pin ⑬ of IC701
Measuring Instrument	Frequency counter
Adjusting Element	RV701
Specified Value	1.50 ± 0.01 MHz

Note: Use a 10:1 probe for connecting the frequency counter.

Connections:

1) Connect Pin ㉕ (PB/$\overline{\text{REC}}$) of IC708 and Pin ⑤ (AFM 5V) of CN702 with a jumper wire.

Adjusting method:

1) Set REC LEVEL control to minimum (0) position.
2) Adjust RV701 to 1.50 ± 0.01 MHz.
3) Reset REC LEVEL control to maximum (10) position.

2. 1.7 MHz carrier frequency adjustment (AS-22P board)

Mode	Recording
Signal	No signal
Measurement Point	Pin ⑬ of IC702
Measuring Instrument	Frequency counter
Adjusting Element	RV703
Specified Value	1.70 ± 0.01 MHz

Note: Use a 10:1 probe for connecting the frequency counter.

Connections:

1) Connect Pin ㉕ (PB/$\overline{\text{REC}}$) of IC708 and Pin ⑤ (AFM 5V) of CN702 with a jumper wire.

Adjusting method:

1) Set REC LEVEL control to minimum (0) position.
2) Adjust RV703 to 1.70 ± 0.01 MHz.
3) Reset REC LEVEL control to maximum (10) position.

3. Recording current ratio adjustment (AS-22P board)

Mode	Recording
Signal	No signal
Measurement Point	Pin ① of CN701
Measuring Instrument	Oscilloscope
Adjusting Element	RV714
Specified Value	$\frac{\text{1.5 MHz level}}{\text{1.7 MHz level}} = 0.80 \pm 0.05$

Note: Use a 1:1 probe for connecting the oscilloscope.

REC LEVEL control setting:

- Minimum (0) position

Adjusting method:

1) Connect Pin ⑭ of IC702 and GND with a 0.01 μF capacitor.
2) Adjust the vertical gain control of the oscilloscope so that the 1.5 MHz sine wave amplitude corresponds to 5 scale.
3) Remove the capacitor connected in the step 1).
4) Connect Pin ⑭ of IC701 and GND 0.01 μF capacitor.
5) Adjust RV714 so that the 1.7 MHz sine wave amplitude corresponds to 4.00 ± 0.25 scale.
6) Remove the capacitor connected in the step 4), and set the vertical gain switch of the oscilloscope to CAL position.

4. E-E output level check (AS-22P board)

Mode	REC
Signal	400 Hz, –7.5 dBs: AUDIO IN terminal L [R]
Measurement Point	Pin ⑥ [Pin ⑧] of CN702
Measuring Instrument	Oscilloscope
Specified Value	693^{+180}_{-140} mVp-p (–10 ± 2 dBs)

Checking method:

1) Connect the oscilloscope to Pin ⑤ [Pin ①] of CN703.
2) Adjust REC LEVEL control so that the 400 Hz signal level is 350 mVp-p (–16 dBs).
3) Connect the oscilloscope to Pin ⑥ [Pin ⑧] of CN702.
4) Confirm that the 400 Hz signal level is 693^{+180}_{-150} mVp-p (–10 ± 2 dBs).

5. 1.5 MHz deviation adjustment (AS-22P board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	Pin ⑥ of CN702
Measuring Instrument	Oscilloscope
Adjusting Element	RV702
Specified Value	693 ± 16 mVp-p (–10.0 ± 0.2 dBs)

Switch setting:

- AUDIO MONITOR (STEREO/MAIN/SUB) switch (S801 on LI-12 board)......MAIN

Adjusting method:

1) Adjust RV702 so that the 400 Hz signal level is 693 ± 16 mVp-p.

6. 1.7 MHz deviation adjustment (AS-22P board)

A. Method using alignment tape

Mode	Playback
Signal	Alignment tape: for AFM stereo operation check (WR5-9CS)
Measurement Point	Pin ⑧ of CN702
Measuring Instrument	Oscilloscope
Adjusting Element	RV704
Specified Value	693 ± 16 mVp-p (–10.0 ± 0.2 dBs)

Switch setting

- AUDIO MONITOR (STEREO/MAIN/SUB) switch (S801 on LI-12 board)......SUB

Adjusting method:

1) Adjust RV704 so that the 1 kHz signal level is 693 ± 16 mVp-p.

B. Method Using spectrum analyzer

Mode	Recording
Signal	No signal: AUDIO IN terminal L 400 Hz, –1.5 dBs: AUDIO IN terminal R
Measurement Point	Pin ⑭ of IC702
Measuring Instrument	Spectrum analyzer
Adjusting Element	RV704
Specified Value	30.0 ± 0.5 kHz

Adjusting method:

1) Adjust RV704 so that the frequency deviation is 30.0 ± 0.5 kHz.

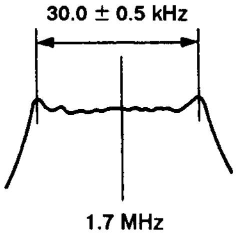


Fig. 9-54.

7. REC matrix L+R adjustment (AS-22P board)

Mode	Recording
Signal	1. 400 Hz, –7.5 dBs: AUDIO INPUT terminal L 2. 400 Hz, –7.5 dBs: AUDIO INPUT terminal R
Measurement Point	Pin ⑨ of IC704 (or Pin ① of IC703)
Measuring Instrument	Oscilloscope
Adjusting Element	RV706
Specified Value	The level difference between L input and R input is 0 ± 5 mVp-p.

Note: When measuring signal level at Pin ⑨ of IC704, start measuring 1 or more minute after input the signal. (for stabilizing AGC)

Adjusting method:

1) Input 400 Hz, –7.5 dBs signal only to AUDIO INPUT terminal L.
2) Read the signal level at Pin ⑨ of IC704 and make note of it. (Approximately 160 mVp-p)
3) Remove the connector from AUDIO INPUT terminal L, and input 400 Hz, –7.5 dBs signal only to AUDIO INPUT terminal R.
4) Adjust RV706 so that the signal level at Pin ⑨ of IC704 matches with that of noted in step 2).

8. REC matrix L–R adjustment (AS-22P board)

Mode	Recording
Signal	400 Hz, –7.5 dBs: AUDIO INPUT L, R both terminals
Measurement Point	Pin ⑨ of IC707 or Pin ⑦ of IC706
Measuring Instrument	Oscilloscope
Adjusting Element	RV707
Specified Value	0 ± 5 mVp-p

Note: Use a 1:1 probe.

Adjusting method:

1) Adjust RV707 so that the signal level at Pin ⑨ of IC707 becomes 0 ± 5 mVp-p.

9. PB matrix L adjustment (AS-22P board)

Mode	Recording and playback
Signal	No signal: AUDIO INPUT terminal L 400 Hz, –7.5 dBs: AUDIO INPUT terminal R
Measurement Point	AUDIO OUTPUT terminal L
Measuring Instrument	Audio level meter
Adjusting Element	RV710
Specified Value	Minimum L ch playback level

Adjusting method:

1) Input 400 Hz, –7.5 dB audio signal only to AUDIO INPUT terminal R.
2) Record the input signal.
3) Play back the recorded section.
4) Adjust RV710 so that the AUDIO OUT terminal L playback level becomes minimum.

10. PB matrix R adjustment (AS-22P board)

Mode	Recording and playback
Signal	400 Hz, –7.5 dB: AUDIO INPUT terminal L No signal: AUDIO INPUT terminal R
Measurement Point	AUDIO OUTPUT terminal R
Measuring Instrument	Audio level meter
Adjusting Element	RV712
Specified Value	Minimum R channel playback level

Adjusting method:

1) Input 400 Hz, –7.5 dB audio signal only to AUDIO INPUT terminal L.
2) Record the input signal.
3) Play back the recorded section.
4) Adjust RV712 so that the AUDIO OUTPUT terminal R playback level becomes minimum.

11. Overall level characteristics separation check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs: AUDIO IN terminal L [R] No signal (insert a shorting plug): AUDIO IN terminal R [L]
Measurement Point	AUDIO OUT terminal L and R
Measuring Instrument	Audio level meter
Specified Value	Level: –7.5 ± 3 dBs Separation: –27.5 dBs or less

Checking method:

1) Set the AUDIO OUT terminal L [R] output level to –7.5 dBs with REC LEVEL control.
2) Record the signal.
3) Play back the recorded section.
4) Confirm that the AUDIO OUT terminal L [R] output level is –7.5 ± 3 dBs.
5) Confirm that the AUDIO OUT terminal R [L] output level is –27.5 dBs or less.

12. Overall distortion check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Distortion meter
Specified Value	0.8% or less*[1]

Checking method:

1) Set the AUDIO OUT terminal L [R] output level to –7.5 dBs with REC LEVEL control.
2) Record the signal.
3) Play back the recorded section.
4) Confirm that the distortion is less than 0.8%. *[1]
   *1: Value when a distortion measuring filter (Fig. 9-54.) is used. Less than 1.0% when no filter is used.

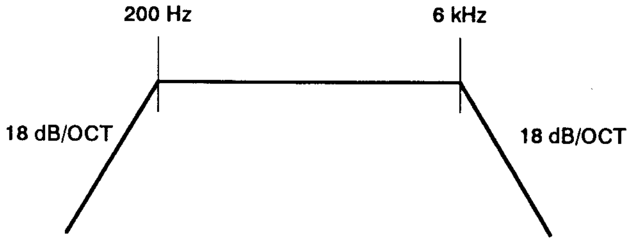


Fig. 9-55.

13. Overall noise level check

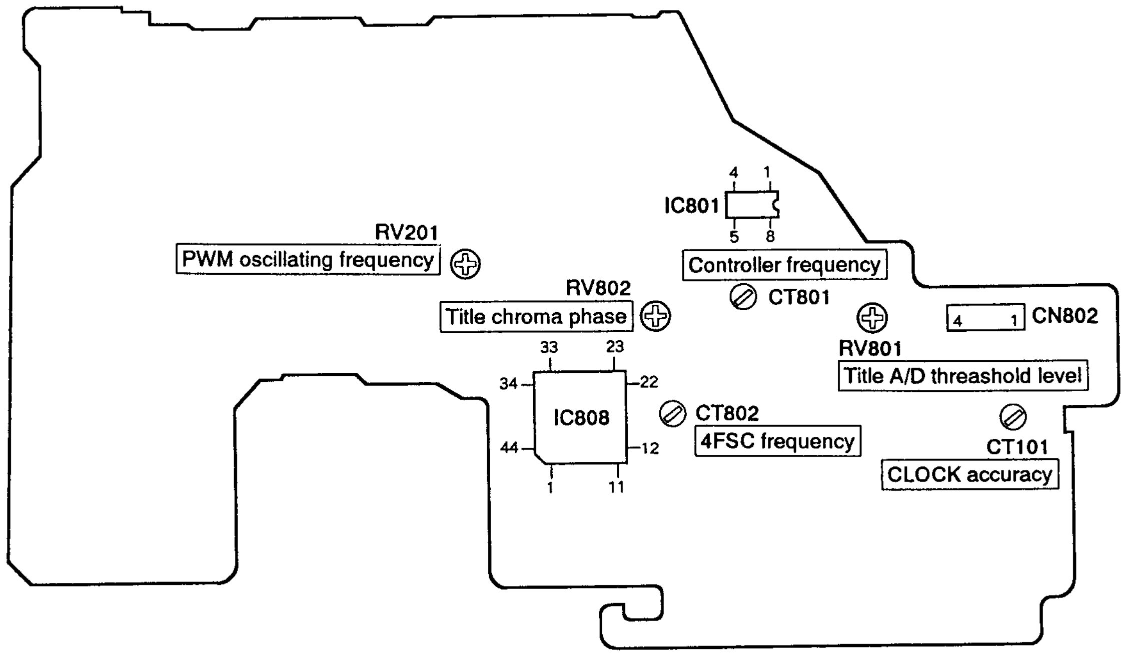
Mode	Self-recording and playback
Signal	No signal (Insert shorting plugs into both AUDIO IN L, R terminals.)
Measurement Point	AUDIO OUT terminal L [R]
Measuring Instrument	Audio level meter
Specified Value	Less than –62.5 dBs*[2]

Checking method:

1) Record the input signal
2) Play back the recorded section.
3) Confirm that the noise level is less than –62.5 dBs.*[2]
   *2: Value when IHF-A hearing correction filter is used.

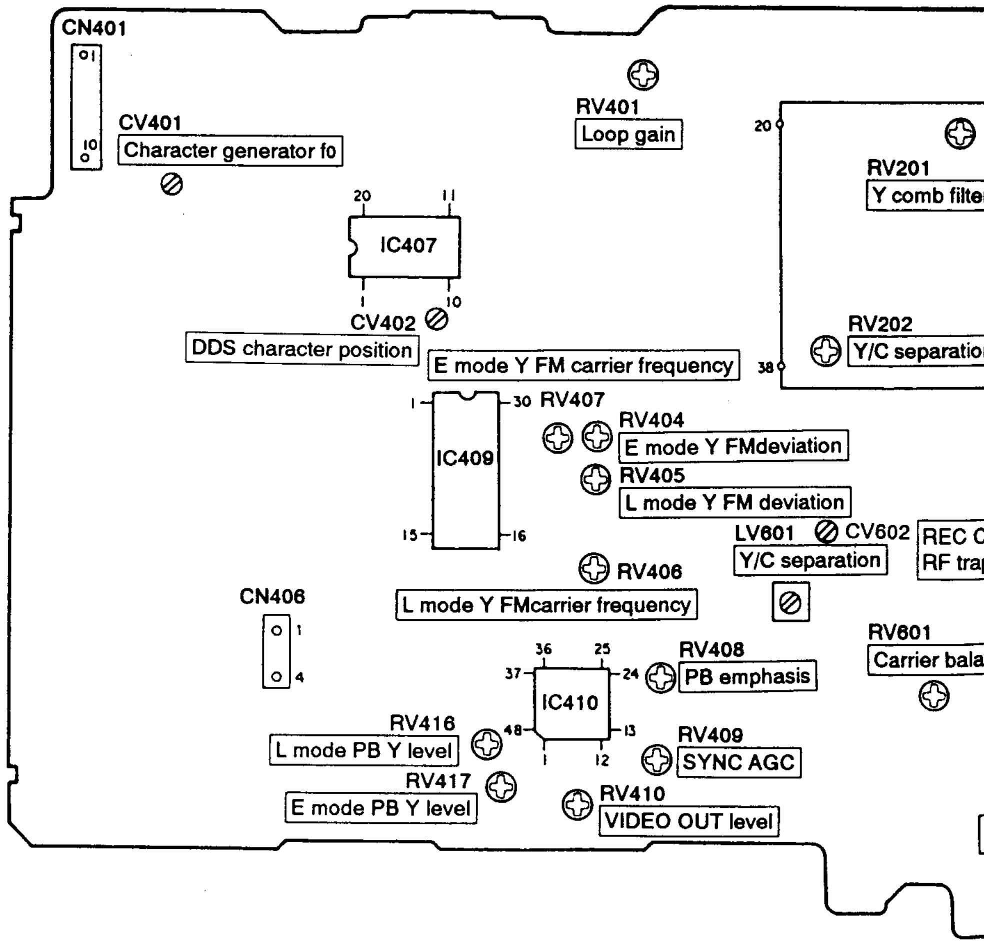
9-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

SS-146P BOARD (CONDUCTOR SIDE)


IC801
4
1
5
8
RV201
PWM oscillating frequency
Controller frequency
RV802
Title chroma phase
CT801
CN802
4
1
RV801
Title A/D threashold level
33
23
34
22
IC808
44
12
1
11
CT802
4FSC frequency
CT101
CLOCK accuracy

MR-30 E

VI-100 BOARD (COMPONENT SIDE)


CN401
1
10
CV401
Character generator fo
RV401
Loop gain
20
RV201
Y comb filte
20
11
IC407
1
10
CV402
DDS character position
E mode Y FM carrier frequency
38
RV202
Y/C separatio
1
30
RV407
RV404
E mode Y FMdeviation
IC409
RV405
L mode Y FM deviation
15
16
LV601
CV602
Y/C separation
REC C
RF trap
RV406
CN406
L mode Y FMcarrier frequency
1
4
36
25
RV408
37
24
PB emphasis
RV601
Carrier bala
IC410
RV416
48
13
L mode PB Y level
1
12
RV409
SYNC AGC
RV417
E mode PB Y level
RV410
VIDEO OUT level

ack

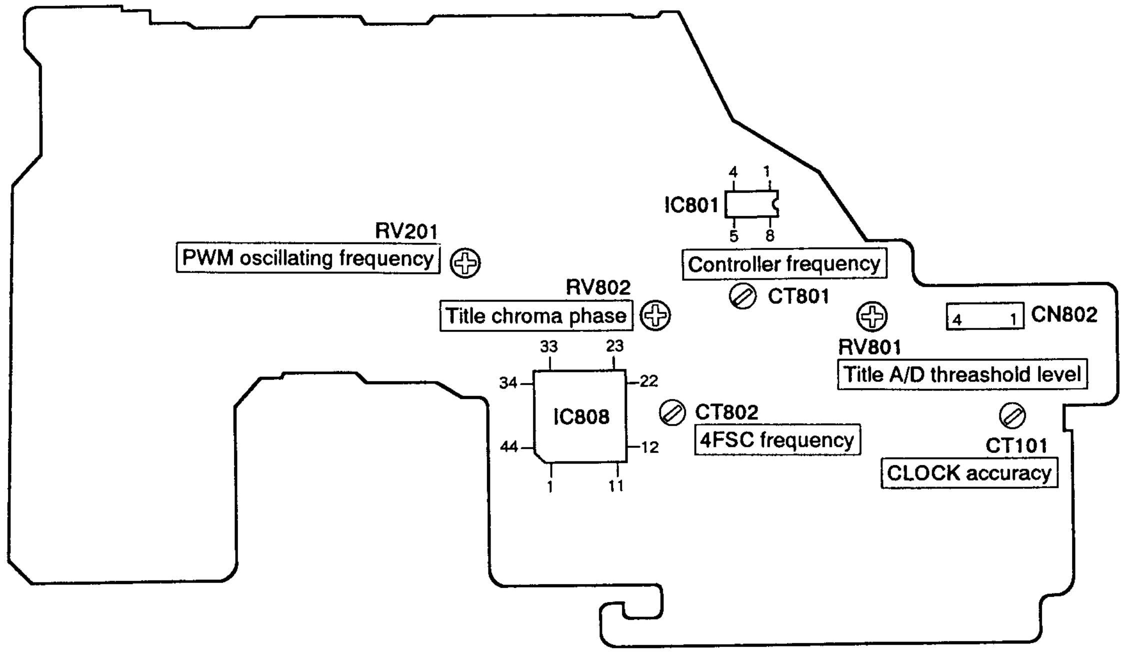
into both
ls.)

[R]

dBs.*2
er is used.

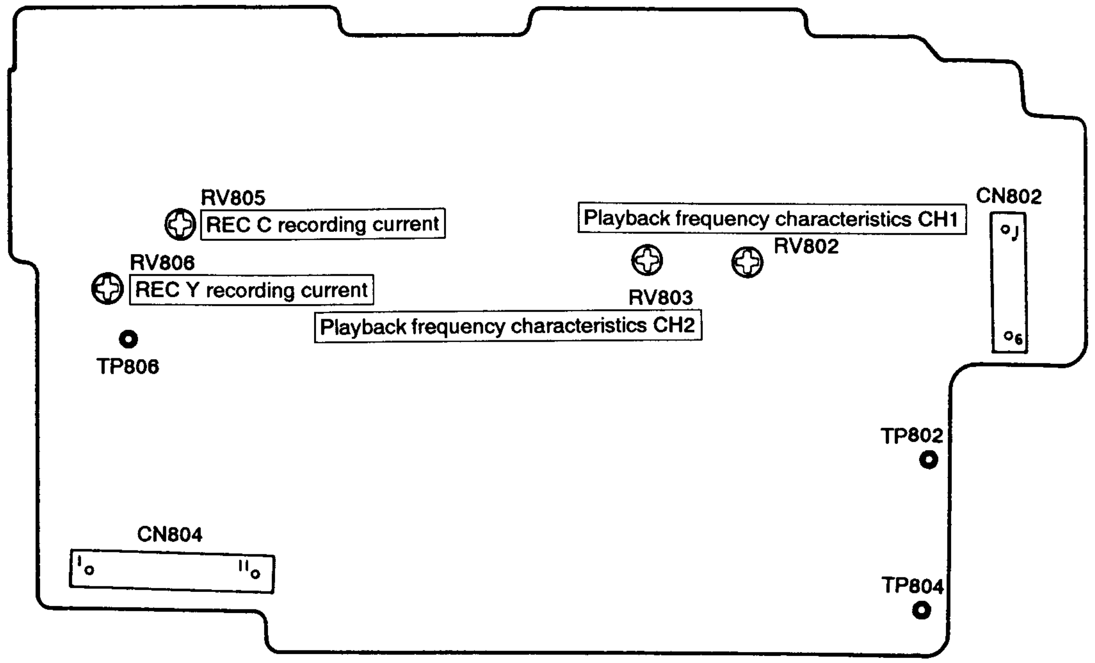
9-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

SS-146P BOARD (CONDUCTOR SIDE)



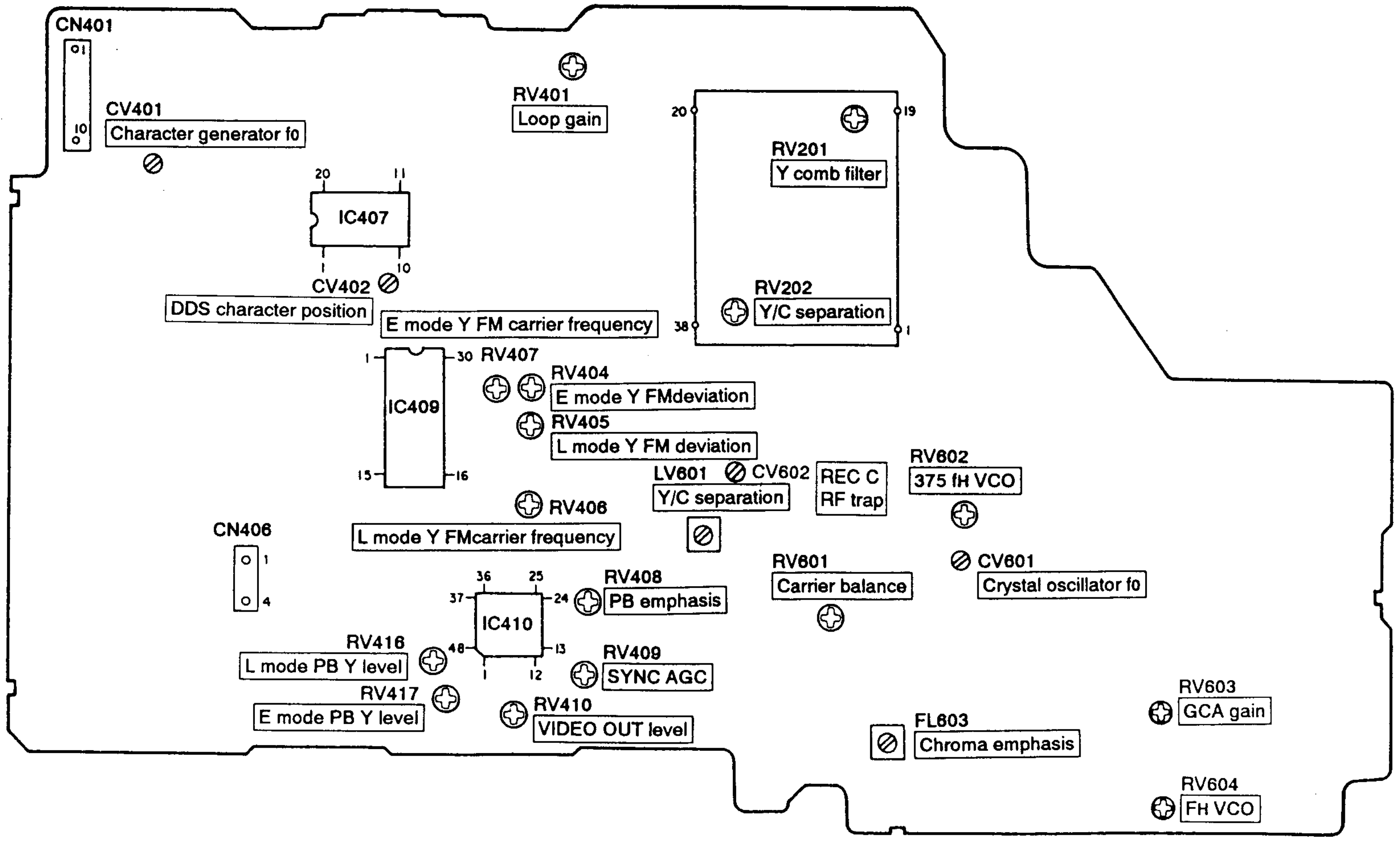
IC801
4
1
5
8
RV201
PWM oscillating frequency
RV802
Title chroma phase
Controller frequency
CT801
RV801
Title A/D threashold level
CN802
4
1
33
23
34
22
IC808
44
12
1
11
CT802
4FSC frequency
CT101
CLOCK accuracy

MR-30 BOARD (CONDUCTOR SIDE)



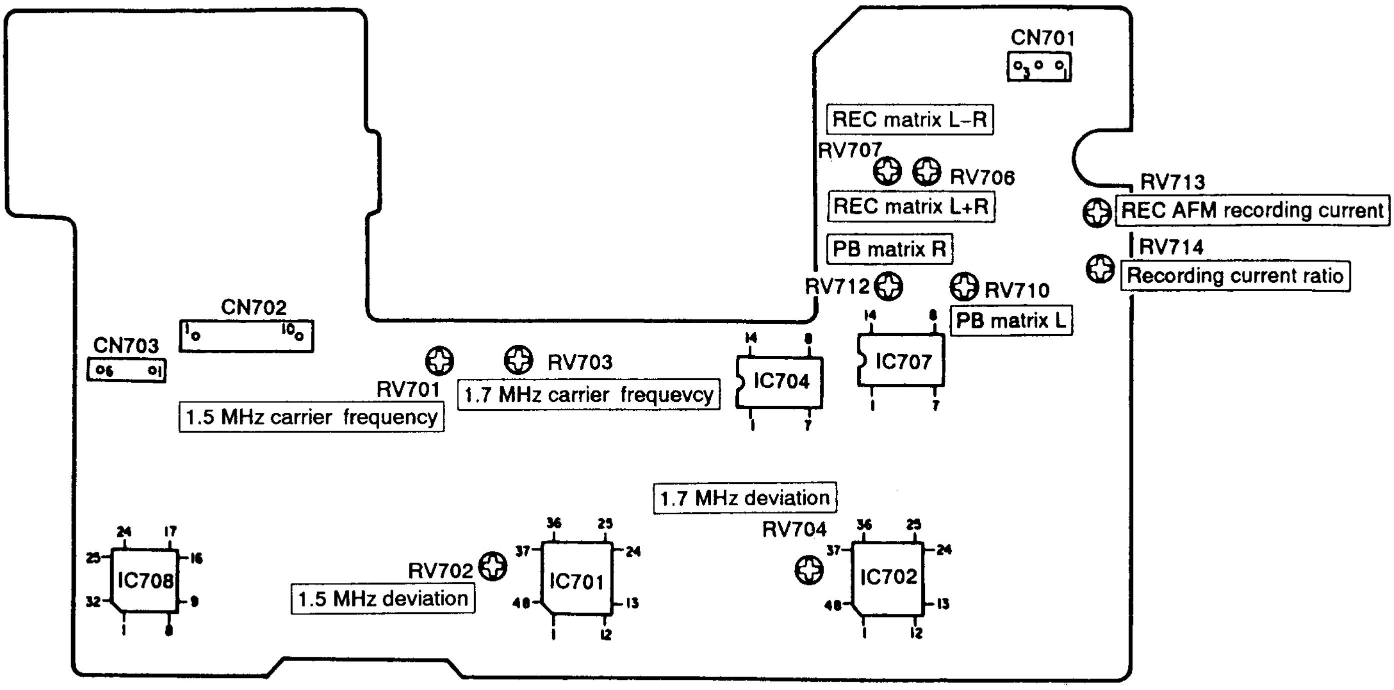
RV805
REC C recording current
RV806
REC Y recording current
TP806
Playback frequency characteristics CH1
RV802
RV803
Playback frequency characteristics CH2
CN802
TP802
CN804
TP804

VI-100 BOARD (COMPONENT SIDE)

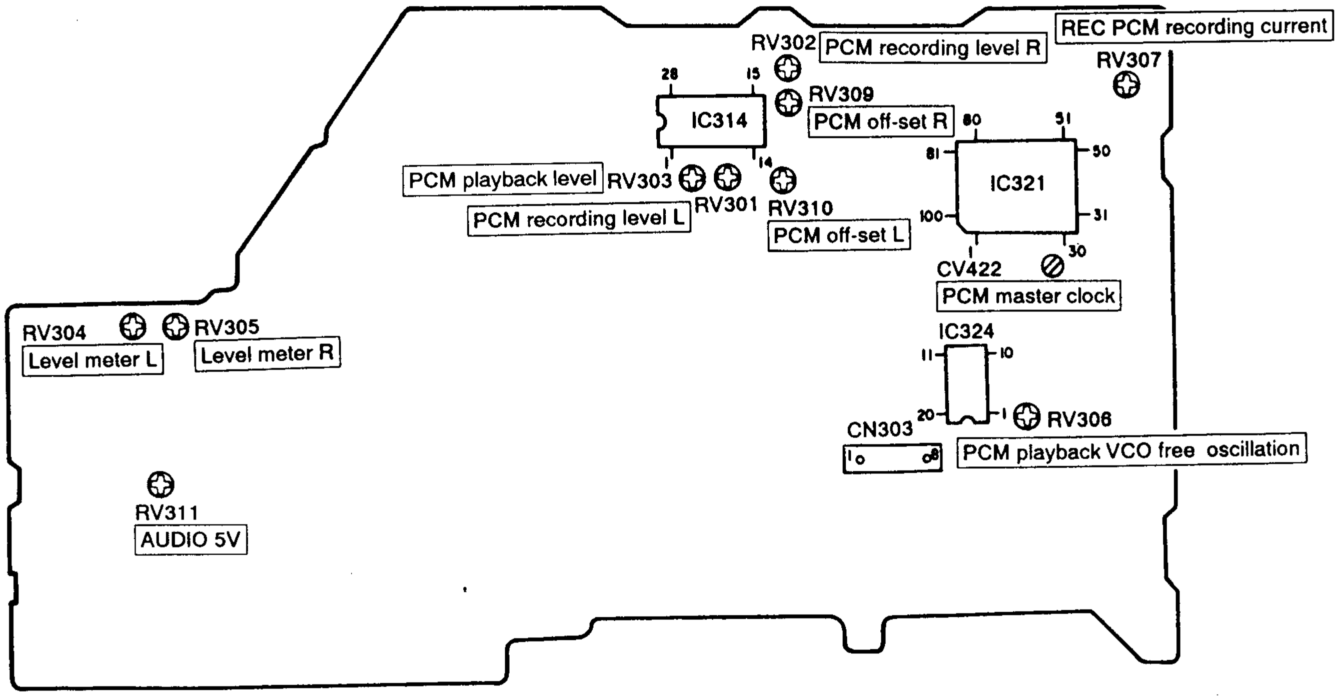


CN401
CV401
Character generator fo
RV401
Loop gain
IC407
20
11
1
10
CV402
DDS character position
RV201
Y comb filter
RV202
Y/C separation
E mode Y FM carrier frequency
IC409
RV407
RV404
E mode Y FMdeviation
RV405
L mode Y FM deviation
LV601
CV602
Y/C separation
REC C
RF trap
RV602
375 fH VCO
RV406
L mode Y FMcarrier frequency
CN406
IC410
RV408
PB emphasis
RV601
Carrier balance
CV601
Crystal oscillator fo
RV416
L mode PB Y level
RV417
E mode PB Y level
RV409
SYNC AGC
RV410
VIDEO OUT level
FL603
Chroma emphasis
RV603
GCA gain
RV604
FH VCO

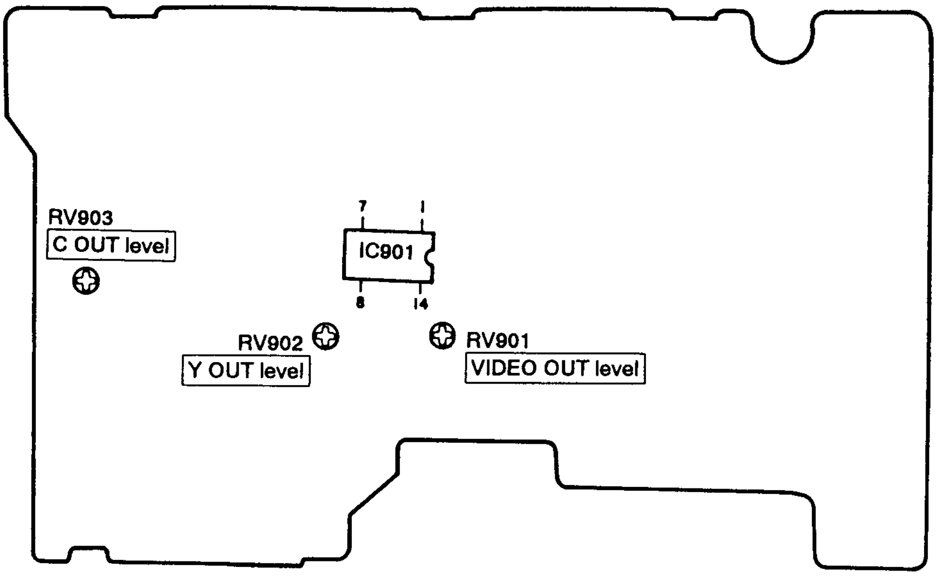
AS-22P BOARD (COMPONENT SIDE)


CN701
REC matrix L-R
RV707
RV706
REC matrix L+R
RV713
REC AFM recording current
PB matrix R
RV714
Recording current ratio
RV712
RV710
PB matrix L
CN702
CN703
IC704
IC707
RV703
RV701
1.7 MHz carrier frequevcy
1.5 MHz carrier frequency
1.7 MHz deviation
RV704
IC708
RV702
1.5 MHz deviation
IC701
IC702

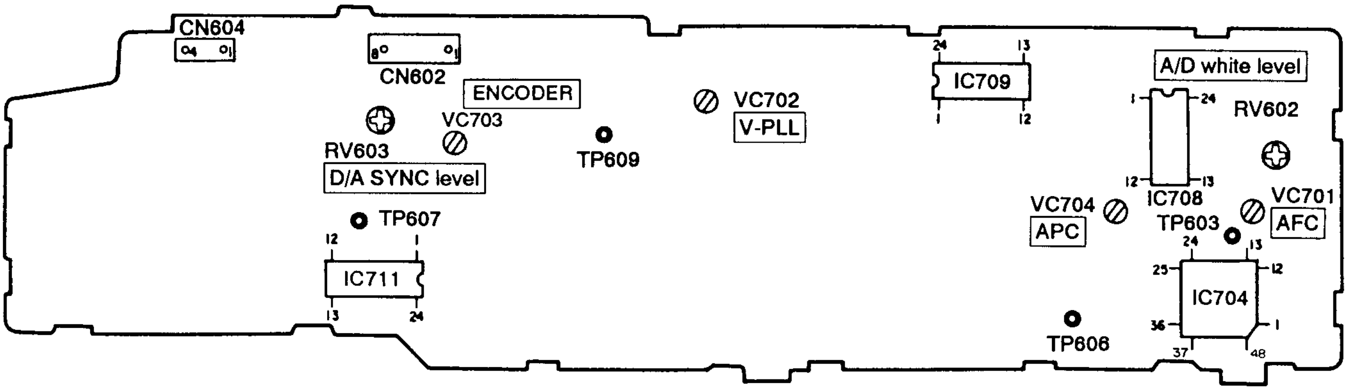
PC-52P BOARD (COMPONENT SIDE)

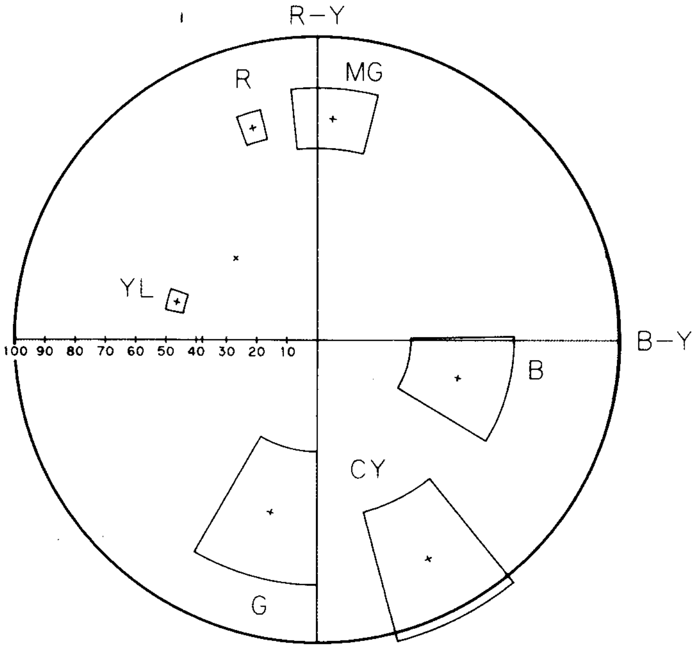

RV302
PCM recording level R
REC PCM recording current
RV307
IC314
RV309
PCM off-set R
IC321
PCM playback level
RV303
RV301
PCM recording level L
RV310
PCM off-set L
CV422
PCM master clock
RV304
RV305
Level meter L
Level meter R
IC324
CN303
RV306
PCM playback VCO free oscillation
RV311
AUDIO 5V

PJ-22P BOARD (COMPONENT SIDE)

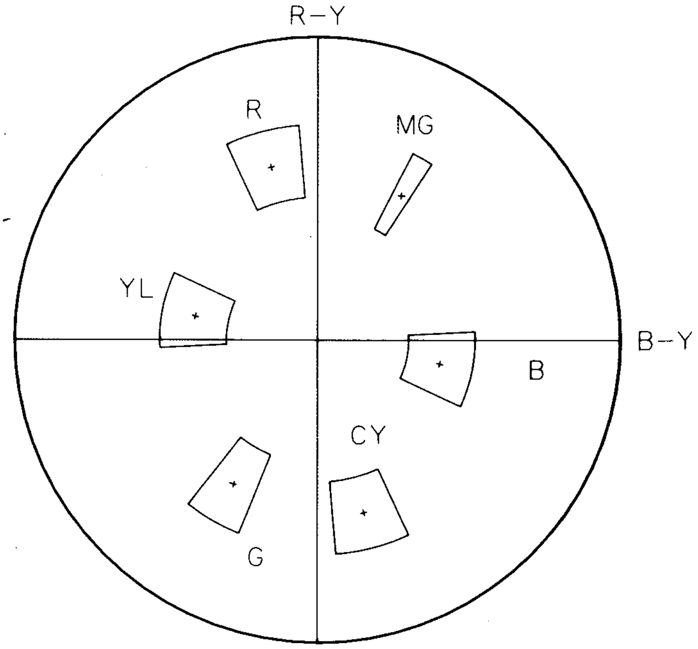

RV903
C OUT level
IC901
7
1
8
14
RV902
Y OUT level
RV901
VIDEO OUT level

DI-21P BOARD (COMPONENT SIDE)


CN604
4
1
8
1
CN602
ENCODER
VC703
RV603
D/A SYNC level
TP609
VC702
V-PLL
TP607
IC711
12
1
13
24
IC709
24
13
1
12
A/D white level
RV602
IC708
1
24
12
13
VC704
APC
TP603
VC701
AFC
IC704
24
13
25
12
36
1
37
48
TP606


R-Y
R
MG
YL
B-Y
100 90 80 70 60 50 40 30 20 10
B
CY
G

Color Reproducibility Adjustment


R-Y
R
MG
YL
B-Y
B
CY
G

Chroma Phase/Gain Adjustment

CCD-V600E

For Vectorscope

CCD-V600E
RMT-502

SONY®
SERVICE MANUAL

AEP Model
UK Model

SUPPLEMENT-1

• ADJUSTMENTS

File this supplement-1 with the service manual.

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The color reproduction standard frame is contained after the adjustment elements location of camera adjustment parts.

SECTION 1
SERVICE MODE

☆This unit adopts the camera adjustment and the EVR (Electronic Variable resistor) with the SENSER LANC system.

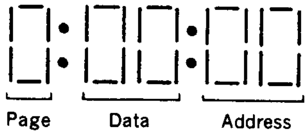
<SENSER LANC>
SENSER LANC is the LANC format to adjust the EVR (Electronic Variable resistor) of Video 8 Handycam and to perform tests by using the LANC (control L). This word stands for the same as the SERVICE LANC formerly used, however, the unified word "SENSER LANC" will be used with this substantial functions.

1-1. HOW TO USE RM-95 JIG (REMOTE CONTROL FOR ADJUSTMENT)

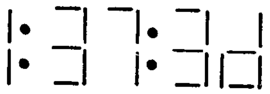
RM-95 jig is used to operate the SENSER LANC. HOLD switch of this jig is remodelled for service to get the SENSER LANC mode. Replacing microcomputer in RM-95 is required for the old-model RM-95 jig, which has no page display function.

Old model	μPD7503G-A71-12 μPD7503G-C23-12	8-759-142-56 8-759-146-77	Page is not displayed (Replacing microcomputer is required)
New model	μPD7503G-C56-12	8-759-148-35	Page is displayed

LCD display of RM-95



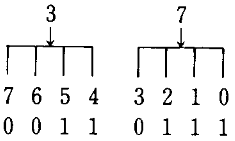
⇨ Example



This means that the page 1 and address 3D is data of 37.

- Reference between Data and Bit

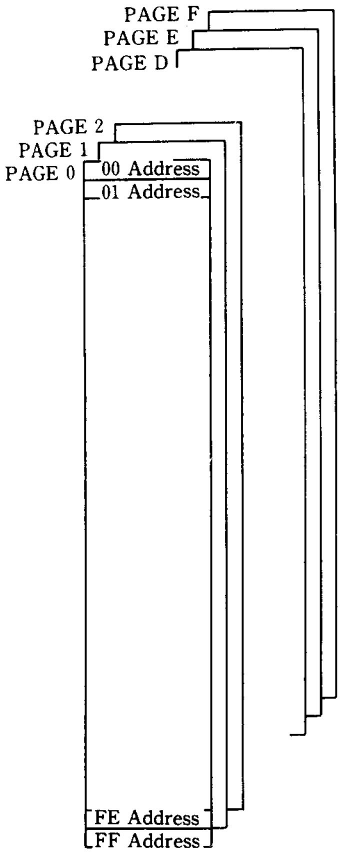
When the data is 37 ⇨ Bit



Page	Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	3D	MP-HG		ME/MP	REC PROOF	V MUTE	A MUTE	JOG	VA PB MODE
		0	0	1	1	0	1	1	1

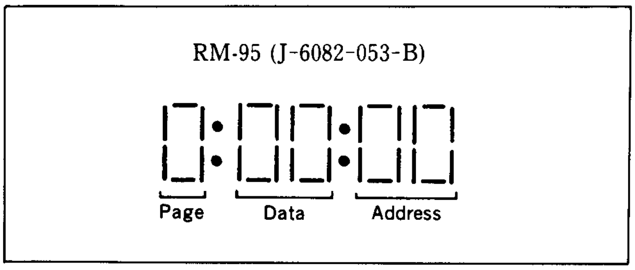
The data in the above list means as follows:
ME SW ....ON
REC PROOF SW ....ON
Audio mute ....ON
JOG..................ON
VA PB MODE........ON

1-1-1. SENSER LANC Memory Map

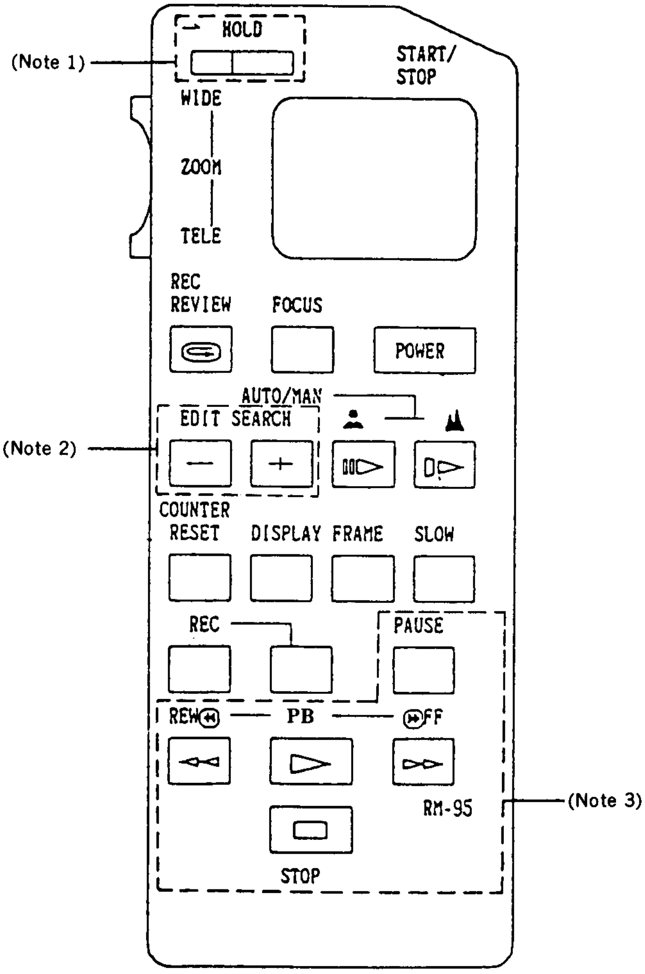


PAGE	Page allocation	Description
0	Service	
1	Mode Control RAM	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2	Mode Control I/O	
3	Mechanical Control RAM	RAM and I/O memory area of the mechanical controller.
4	Mode Control I/O	
5	Camera microcompuler RAM	RAM and I/O memory area of the camera micro controller.
6	Camera microcompuler I/O	
7	Spare	
8	Spare	
9	Spare	
A	Spare	
B	Spare	
C	Spare	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is tuned off. Releasing protect is required for changing data.
E	Camera EE-PROM2	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is tuned off.
F	Camera EE-PROM1	

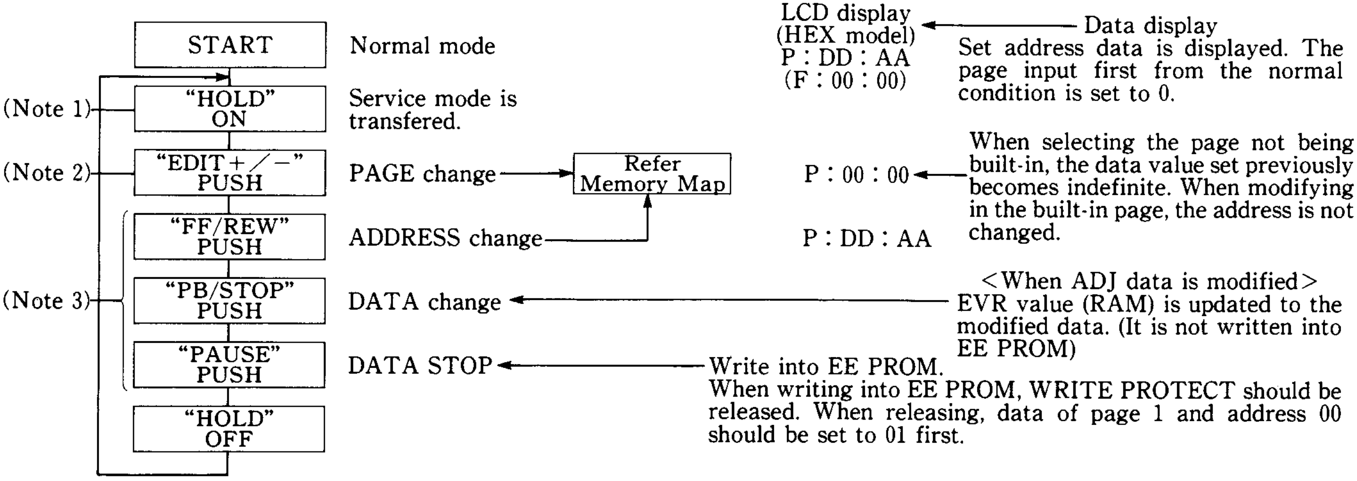
Note) There are 16 types of page from 0 to F. The allocation of page is as the above list. Only the memory of page D, E and F is not erased when the power is turned off as the EVR (Electronic Variable resistor).


RM-95 (J-6082-053-B)
0:00:00
Page
Data
Address

RM-95 (J-6082-053-B)


HOLD
(Note 1)
START/
STOP
WIDE
ZOOM
TELE
REC
REVIEW
FOCUS
POWER
AUTO/MAN
EDIT SEARCH
(Note 2)
COUNTER
RESET
DISPLAY
FRAME
SLOW
REC
PAUSE
REW
PB
FF
RM-95
(Note 3)
STOP

1-1-2. Tansfer method of the service mode with RM-95


START
Normal mode
(Note 1)
"HOLD" ON
Service mode is transfered.
(Note 2)
"EDIT+/−" PUSH
PAGE change
Refer Memory Map
"FF/REW" PUSH
ADDRESS change
(Note 3)
"PB/STOP" PUSH
DATA change
"PAUSE" PUSH
DATA STOP
"HOLD" OFF
LCD display
(HEX model)
P : DD : AA
(F : 00 : 00)
Data display
P : 00 : 00
P : DD : AA

Set address data is displayed. The page input first from the normal condition is set to 0.

When selecting the page not being built-in, the data value set previously becomes indefinite. When modifying in the built-in page, the address is not changed.

<When ADJ data is modified>
EVR value (RAM) is updated to the modified data. (It is not written into EE PROM)

Write into EE PROM.
When writing into EE PROM, WRITE PROTECT should be released. When releasing, data of page 1 and address 00 should be set to 01 first.

Command name	Command function	Function Button with RM-95
Page Up	Page+1	Edit Search+
Page Down	Page−1	Edit Search−
Direct Page Set	Set to direct page	Event Clear
Address Up	Address+1	Fast Forward
Address Down	Address−1	Rewind
Data Up	Data+1	Play Back
Data Down	Data−1	Stop
Store	Write data into EEPROM. RAM	Pause

1-1-3. ADJUST, TEST MODE description

MODE		PAGE/DATA/ADDRESS	Contents
ADJUST	Switching Position Adjustment	d : -- : 04 (high) d : -- : 05 (low)	Switching position adjustment See to page 59 for details
	Battery Down Adjustment	d : -- : 06 (Sensor value) d : -- : 07 (Set value)	Use for battery down adjustment See to page 58 for details
TEST MODE	Pass Adjustment Truck Shift	1 : 30 : 4D	Truck shift for pass adjustment Set to the data described left and set the playback mode.
	Emergency Inhibit	1 : 10 : 4D	Detection of emergency is inhibited. Even if battery is ended, power is not turned off. SP/LP is not automatically distinguished. Emergency detection except for TAPE/TOP•END is inhibited.
	Emergency Code	D : -- : 20~22 D : -- : 24~26	First emergency is displayed. Last emergency is displayed. (※ See to 1) (IC501 μPD75312GF-018 and 024 are not displayed.)
	RECOG SW Check	1 : -- : 3D 1 : -- : 3E	Mode switch position is displayed. RECOG SW ON OFF is displayed. (※ See to 2)
	Function SW Check	1 : -- : E8~ED	Pressing KEY is checked. (※ See to 3)
	Motor single check	3 : 10 : DD (Loading Ⓜ) 3 : 11 : DD (Drum Ⓜ) 3 : 12 : DD (Capstan Ⓜ)	Rotating in right direction, inverting, stopping of each motor can be separately controlled. • Loading Motor • Drum Motor (※ See to 4) • Capstan Motor
	Sensor check	3 : 21 : DD	The following sensor is input by performing A/D selecting, and the A/D selecting value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction DEW sensor. (※ See to 5)
	Reception contents check of wireless remote control	1 : -- : 1E and 1D	The received code contents of the remote control code can be confirmed. (※ See to 6)

※ 1 Emergency Code Check

With the SENSER LANC (The emergency code has the first emergency and last emergency. The last emergency side is changed when emergency is generated ; the first emergency side records the only code generated first.)

		First	Last	
PAGE D	ADDRESS	20, 21	24, 25	← Emergency code
PAGE D	ADDRESS	22	26	← Mode when emergency is generated

Displayed → Be sure to rewrite the address from 20 to 26 to data 00 after the operation.

(1) Emergency code list

Code		Emergency contents
20H,24H	21H,25H	
00	00	Normal mode
01	00	Loading Motor emergency.
02	00	Unloading, Reel emergency.
04	00	Steady, Reel emergency.
08	00	Capstan emergency.
00	01	Drum steady, FG emergency.
00	02	Drum steady, PG emergency.
00	21	Drum steady, FG emergency.
00	22	Drum steady, PG emergency.
00	41	Loading, Drum FG emergency.
00	42	Loading, Drum PG emergency.
00	81	Unloading, Drum FG emergency.
00	82	Unloading, Drum PG emergency.
——	——	Dram steady Phase emergency.

(2) Mode code

Mode	Code	Mode	Code
STOP	20	EDIT S CUE	5A
FF	30	EDIT S REV	5B
REW	38	EDIT S STIL	5F
PB	60	+×1	62
CUE	64	−×1	63
REV	65	−STILL	79
STILL	70	+FRAME	76
REC	40	−FRAME	77
REC. P	41	+×2	66
SHUTTLE EDIT (+)	5A	−×2	62
SHUTTLE EDIT (−)	5B	LOADING	21
CAM STBY	41	UNLOADING	13
CAM REC	40	EJECTED	10
REC REV+	58	+SLOW	72
REC REV−	59	−SLOW	73

Note : Pay attention that the above codes are displayed in the reverse order when FD-15 board IC201 μPD75312GF-018 and 024 are mounted.
Example) PB 06

※ 2 RECOG SW Check

With the SENSER LANC

Page	Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	3D	MP-HG		ME/MP	REC PROOF	V MUTE	A MUTE	JOG	VA PB MODE

"1"=REC inhibit

"1"=ME/ 0 : MP

"1"=MPHG/ 0 : Normal

Page	Address	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	3E	DEW			RP PB MODE	CASSETTE CONTROLLER LOCK	MODE SW2	MODE SW1	MODE SW0

See to the following list

When locking the cassette controller, "1"

- MODE SW CODE LIST

	Address 3E contents			Real port condition			Remark
Position	M SW2	M SW1	M SW0	M SW2	M SW1	M SW0	
EJECT	0	0	0	L	H	H	Cassette controller eject position
IA	0	0	1	H	H	H	Interval A
UNLOAD	0	1	0	L	L	H	Normal EJECT unloaded
IB	0	1	1	H	L	H	Interval B
STOP	1	0	0	H	L	L	STOP mode position
IC	1	0	1	H	H	L	Interval C
FWD	1	1	0	L	H	L	Pinch pressure welded
ID	1	1	1	L	L	L	Interval D
SHAKING HEAD POSITION	0	0	0	L	H	L	Shaking head ptsition

☆ This mode releasing is turn off the SENSER LANC.

※ **3 Switch check** (See to the previous page for reading code.)

With the SENSER LANC :

Page 1	Address E8 to ED	Data Refer to table

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	K IN 7	K IN 6	K IN 5	K IN 4	K IN 3	K IN 2	K IN 1	K IN 0
E 8 K OUT 0	EXPOSURE	COSTROL UP	PAUSE	REC	PLAY	REW	FF	STOP
E 9 K OUT 1	SHUTTER	CONTROL DOWN	SLOW	FRAME /RVS	——	MENU ▼	DATA SCREEN	VTR
EA K OUT 2	FADER	AE	FRAME /FWD	MENU EXEC	MENU	MENU ◀	MENU ▶	CAM
EB K OUT 3	ONE PUSH	WB	START/ STOP	——	——	RVS	EDIT CUE	STBY
EC K OUT 4	ZERO MEMORY	TIME	DATE	EJECT	——	——	COUNTER RESET	FOCUS
ED K OUT 5	COLOR	MERORY	TITLE2	TITLE1	——	——	——	AUTO LOCK

☆ This mode releasing is turn off the SENSER LANC.

- Check the initial set value in shipping after the service, because EE PROM is monuted to VTR in this unit.

D Page Initial set value in shipping (for this unit)

Address	Contents					Set value
0 0 0	Aging mode					00
0 0 1	Each flag area (destination/model /HEAD width1×2MUTE)					9A
0 0 2	VTR REC key acceptance authorization					01
0 0 3						00
0 0 4	Switching position (low)					Adjustment value
0 0 5	Switching position (high)					Adjustment value
0 0 6	Battery A/D modification value					Adjustment value
0 0 7	Battery end set area					Adjustment value
0 1 0	SR data storage area	EDIT OFF	MP	HI8	LP	5F
0 1 1	SR data storage area	EDIT OFF	MP	HI8	SP	65
0 1 2	SR data storage area	EDIT OFF	MP	NOR	LP	58
0 1 3	SR data storage area	EDIT OFF	MP	NOR	SP	68
0 1 4	SR data storage area	EDIT OFF	ME	HI8	LP	55
0 1 5	SR data storage area	EDIT OFF	ME	HI8	SP	69
0 1 6	SR data storage area	EDIT OFF	ME	NOR	LP	5C
0 1 7	SR data storage area	EDIT OFF	ME	NOR	SP	68
0 1 8	Titler vertical position adjustment area JOG mode					0C
0 1 9	Titler vertical position adjustment area NOR mode					06
0 1 A	Titler horizontal position adjustment area playback mode					11
0 1 B	Titler horizontal position adjustment area EE mode					11
0 1 C	When SR data storage area EDIT is ON : Hi8 mode					65
0 1 D	When SR data storage area EDIT is ON : Normal mode					5C
0 1 E						--
0 1 F						--
0 2 0	First generated emergency code (low) (First emergecy)					00
0 2 1	First generated emergency code (high) (First emergency)					00
0 2 2	Mode code when emergency is generated first					00
0 2 3						00
0 2 4	Last generated emergency code (low) (Last emergency)					00
0 2 5	Last generated emergency code (high) (Last emergency)					00
0 2 6	Mode code when emergency is generated last.					00

※ 4 In order to operate the motor singly

[Operation]

Write the following number with the SENSER LANC into Page 3 Address DD.

Then the check of each motor is performed.

10H → Loading motor
11H → Drum motor
12H → Capstan motor

After the set of the above data, operation is performed by pressing the following keys. (When the operation is performed with RM-95, set the HOLD switch to left and release the SENSER LANC.)

FF key → Rotating in right direction
REW key → Inverting
STOP key → Stop

Note) In this mode, operation is only performed on the normally loaded condition.

Note) The motor rotating speed is the normal rotating number. (Drum 30Hz, Capstan SP mode speed, Loading normal speed).

In order to release this mode, turn off the SENSER LANC and turn off the power.

※ 5 In order to read the A/D selecting value (Senser check)

[Operation]

With the SENSER LANC:

Write PAGE 3 Address DD Data 21

The following address (PAGE 3) of the A/D selecting value of each A/D port is displayed.

Address	Selecting value Contents
65	TOP sensor (light ON)
67	TOP sensor (light OFF)
64	END sensor (light ON)
66	END sensor (light OFF)
62	S-REEL FG
63	T-REEL FG
60	Thermistor (for SWP correction)
5F	DEW sensor

The voltage of A/D selecting 1 step: 4.9÷256≒19mV

※ 6 In order to check the reception contents of the wireless remote control

With SENSER LANC, the received remote control code is displayed to PAGE 1 Address 1E.

The remote control code is only displayed while the code which the LANC code is shifted to right for 1 bit is pressed, and FF is displayed when the code is released.

The received category code of the remote control is displayed to the upper 4 bit of PAGE 1 Address 1D.

(The description of the remote control code is omitted in this chart.)

1-1-4. How to use practically

How to use:

How to set the adjustment mode and the TEST mode

Set RM-95 to the service mode.

How to change and write data

Press the PAUSE button of RM-95. Pressing PAUSE button is not required for some RAM and I/O area.

Change and write data of EE-PROM

Removing PROTECT is required. The PROTECT is removed by setting as follows:

PAGE 1	Address 00	Data 01

(But CAMERA system don't need release, because don't set PROTECT.)

How to release each mode

Releasing from EE-PROM area	Be sure to return the data of PAGE 1 address 00 to 00 from 01, and then turn off the service mode of RM-95.
Releasing from RAM and I/O area	Turn off the service mode or turn off the power, because hoding of data is not required.

- In order to perform the pass track shift......Refer to page 13.
- In order to inhibit the emergency detection......Refer to the list in page 8.
- In order to check the emergency code......Refer to page 8.
- In order to operate the motor singly......Refer to page 11.
- In order to check the function switch......Refer to page 10.
- In order to check the mechanical switch......Refer to page 9.
- In order to read the A/D selecting value......Refer to page 11.
- In order to check the reception contents of the wireless remote control......Refer to page 11.

SECTION 2
MECHANICAL ADJUSTMENTS

For Mechanical Adjustments

Refer to mechanical adjustment (8 mm Video MECHANICAL ADJUSTMENT MANUAL III) manual for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-972-732-11)

For setting of the track shift mode, however, refer to the following.

2-1. SETTING THE TRACK SHIFT MODE

Note : Camera part and video part should have been installed.

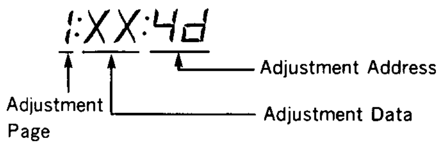
[Setting Method]

1) Set the adjustment commander to the HOLD ON side.
2) Press EDIT SEARCH + button once, and select page 1.
3) Select the adjustment address 4D with FF or REW button.
4) Set to 3X with PLAY and STOP button. (Setting of track shift mode)

Note : 3X should be the number from 31 to 3F. (To display "3X" with PLAY and STOP button is simple to shift.)

(When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)

5) Set to the HOLD OFF side in order to set the normal mode.



(1X : TEST 1
2X : TEST 2 ('CH Playback)
3X : TEST 3 (Shift mode)
4X : Shift release)

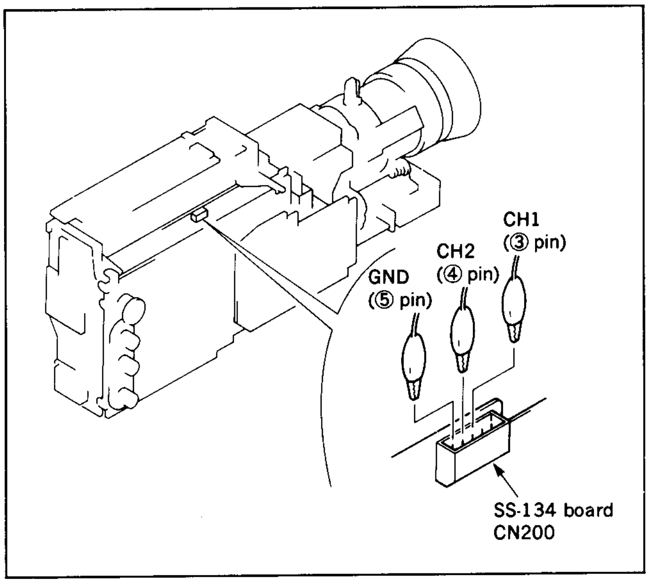


Fig. 2-1.

2-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guide, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1 : SS-134 board CN200 pin ③ (RF OUT)
   CH2 : SS-134 board CN200 pin ④ (RF SWP)
3) Play back the tracking alignment tape (WR5-1CP) (8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet sides. When not flat, make adjustment as follows. (Refer to Figs. 2-1 and 2-2.)

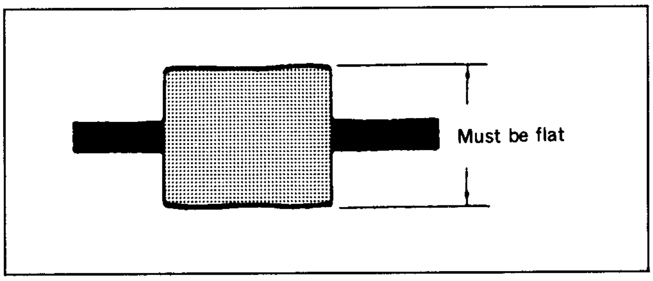


Fig. 2-2.

For disassembling the cabinet and each board, refer to the Service Manual, SECTION 2 Disassembly

2-3. HOW TO DISASSEMBLE LENS UNIT

2-3-1. How to Remove Camera Frame (Refer to Fig. 2-3.)

1) Remove screw ❶ and disassemble D/D converter unit ❷.
2) Remove 4 screws ❸ and camera frame ❹.

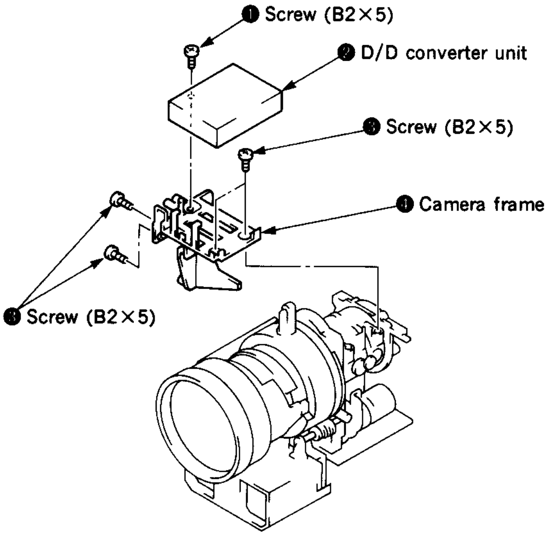

❶ Screw (B2×5)
❷ D/D converter unit
❸ Screw (B2×5)
❹ Camera frame
❸ Screw (B2×5)

Fig. 2-3.

2-3-2. How to Remove AF Motor and PZ Motor and SW Board (Refer to Fig. 2-4.)

1) Remove screw ❶ and then remove AF motor ❷ and connector ❸.
2) Remove screw ❹ and then remove PZ motor ❺.
3) Remove screw ❻ and then SW board ❼ and connector ❽.

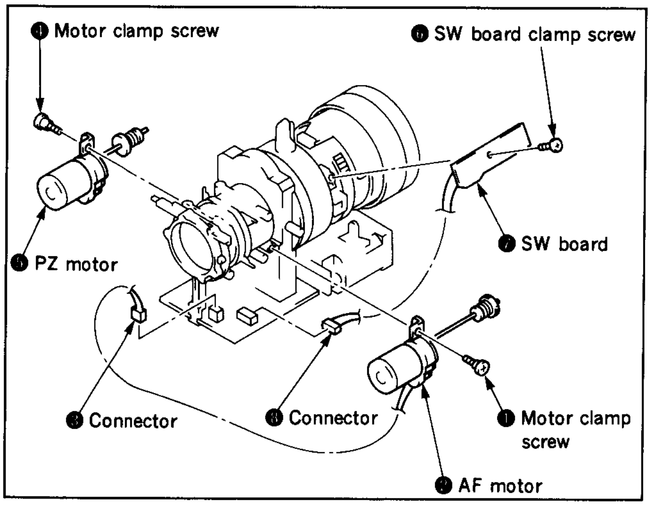

❹ Motor clamp screw
❻ SW board clamp screw
❼ SW board
❺ PZ motor
❸ Connector
❽ Connector
❶ Motor clamp screw
❷ AF motor

Fig. 2-4.

2-3-3. How to Remove AF Board and IG meter (Refer to Fig. 2-5.)

1) Remove screw ❶ and then remove AF board ❷ and connector ❸.
2) Remove IG meter ❹.

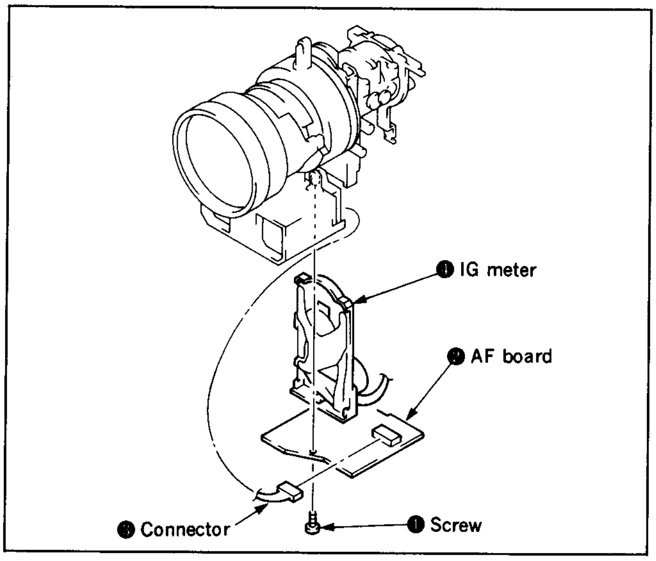

❹ IG meter
❷ AF board
❸ Connector
❶ Screw

Fig. 2-5.

2-3-4. How to Remove AF Block (Refer to Fig. 2-6.)

1) Remove 2 screws ❶ and then remove AF block ❷.

Note : The screw on the IRED lens cylinder side is covered with a tape and can not be seen. Be sure to affix the tape when reassembling.

Note : When mounting AF block, make sure that the distance ring can surface ⓐ and prism arm ⓑ are properly assembled.

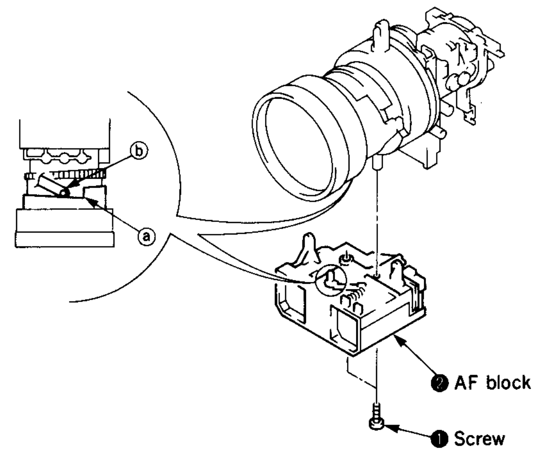

ⓑ
ⓐ
❷ AF block
❶ Screw

Fig. 2-6.

2-3-5. How to Remove Relay Lens Tube Unit (Refer to Fig. 2-7.)

1) Remove 2 screws ❶.
2) Remove eccentric roller ❷ and then remove relay lens tube unit ❸.

Note : After reassembling, be sure to adjust the back focus.

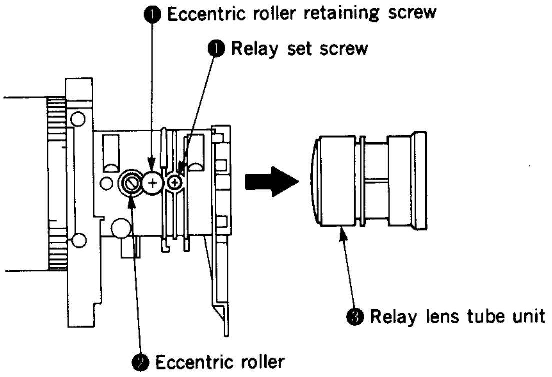

❶ Eccentric roller retaining screw
❶ Relay set screw
❸ Relay lens tube unit
❷ Eccentric roller

Fig. 2-7.

2-3-6. How to Remove Focus Lens (Refer to Fig. 2-8.)

1) Remove screw ❶ and then remove N stopper ❷.
2) Remove focus lens ❸.

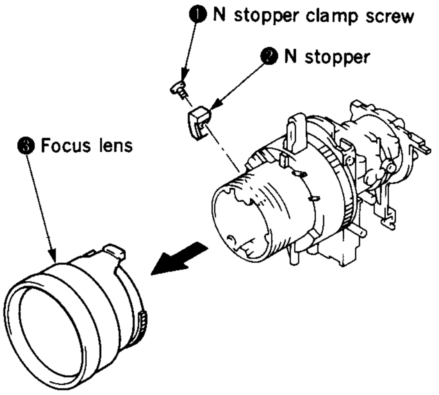

❶ N stopper clamp screw
❷ N stopper
❸ Focus lens

Fig. 2-8.

SECTION 3
CAMERA ADJUSTMENTS

PREPARATION FOR ADJUSTMENT (CAMERA BLOCK)

3-1. LIST OF SERVICING JIGS

- Oscilloscope
- Stabilized power supply (2 units)
- Adjusting screwdriver
- L lench
- Stop watch
- Color monitor TV
- Vectorscope
- Desk-top calculator

Ref. No.	Name	Part No.	Use
J-1	Filter (C14)	J-6080-054-A	Auto white balance adjustment
J-2	ND filter 0.1	J-6080-807-A	
	ND filter 0.3	J-6080-818-A	
	ND filter 0.4	J-6080-806-A	
	ND filter 0.9	J-6080-833-A	
	ND filter 1.0	J-6080-808-A	
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color bar chart for pattern box	J-6020-250-A	
J-5	Extension cable (5P)	J-6082-043-A	To connect VC-86 board CN304 and DC-DC converter
	Extension cable (4P)	J-6082-042-A	To connect VC-86 board CN307 and VA-64 board CN650
J-6	Extension cable (12P)	J-6082-056-A	To connect VC-86 board CN305 and FP-376 flexible board
J-7	Camera fixing jig	J-6080-894-A	
J-8	Siemens-star chart Transmission type simens-star chart	J-6080-875-A J-6080-923-A	Either of the siemens-star charts which appear during adjustment may be used.
J-9	Adjustment remote control * 1	J-6082-053-B	
J-10	AF microcomputer data reader jig * 2	J-6082-025-A	
J-11	CPA connector jig	J-6082-109-A	

* 1 Microcomputer IC in the adjustment Remote controller except for μPD7503G-C56-12 (8-759-148-35) does not allow the page selecting. Replace the microcomputer in such a case.

* 2 Change the fixed number of R1 from 10kΩ to 100kΩ in the AF microcomputer data reading jig. (If the number is kept to 10kΩ, the adjustment data can not change because of the difference of of the impedance.)
When adjustment the old-model Handy Cam, 100kΩ is allowed to perform the adustment.

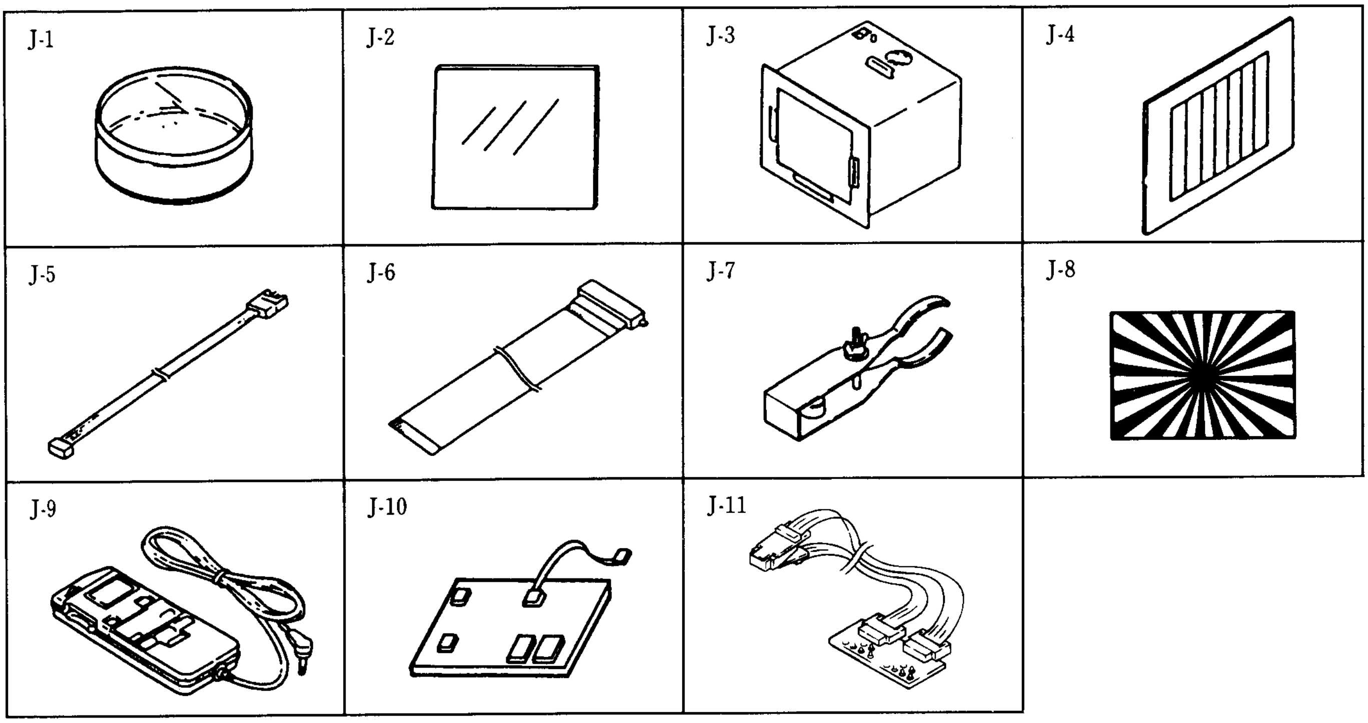

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11

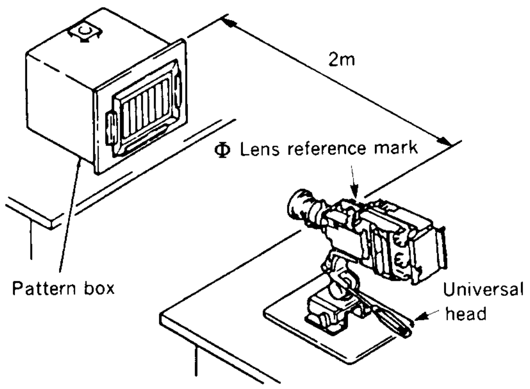
Fig. 3-1.

3-2. PREPARATION FOR ADJUSTMENT

3-2-1. Preparation

Note: Refer to the service manual, "SECTION 2. DISASSEMBLY" for details of the cabinet and individual boards removal procedure.

1) Connect the camera block and the video block by using the extension cable, and other equipment as shown in Fig. 3-3.
2) EVF (Electrical View Finder) section VF-26 or VF-27 boards is necessary for confirmation of shutter speed, white balance mode and etc.
   If not necessary, it can removed by taking out CN703 on the SW-168 board.
3) MIC board (MC-63 board) is not necessary. Remove it by taking out CN801 on the MC-63 board.


2m
Φ Lens reference mark
Pattern box
Universal head

When the camera block and the video block are separated with the cabinet removed, fix by using the camera fixing jig.

Fig. 3-2.

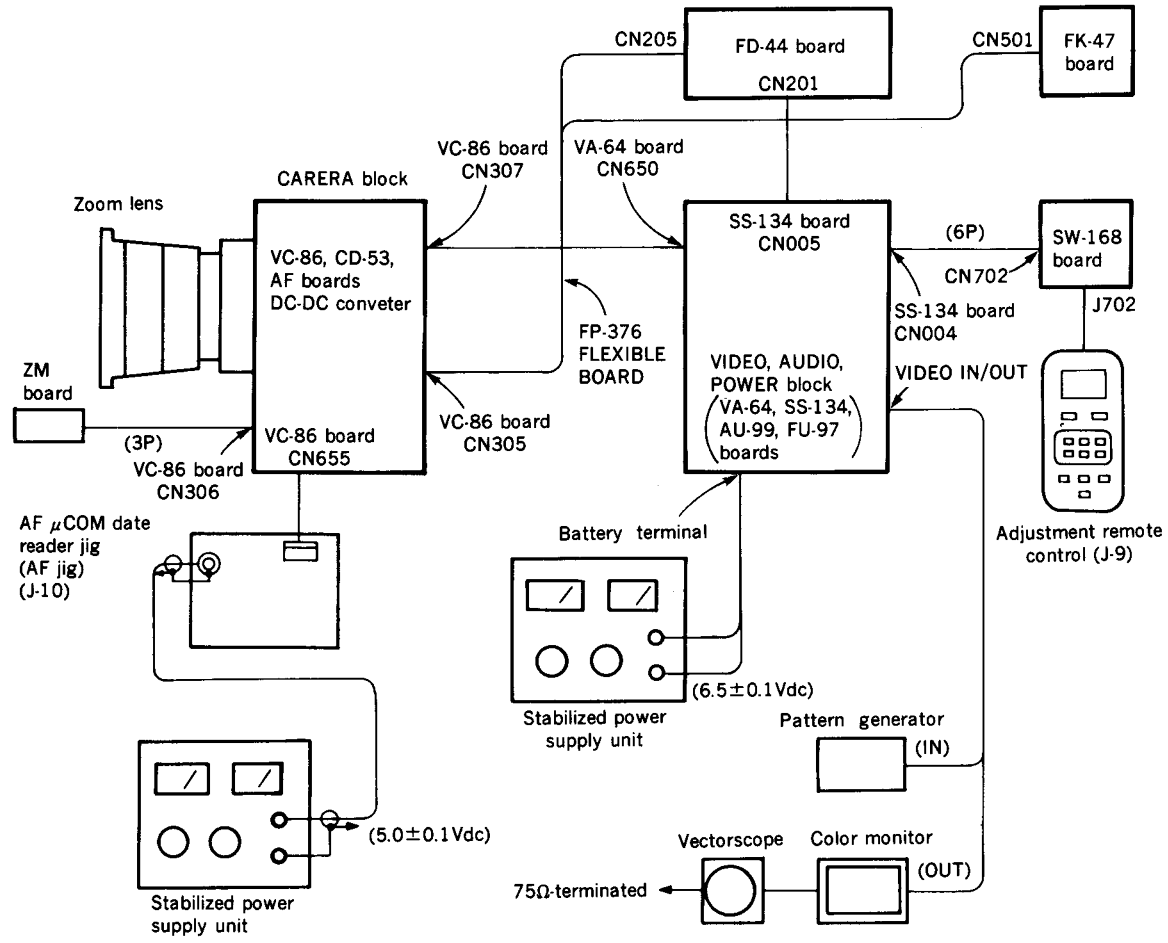

CN205
FD-44 board
CN201
CN501
FK-47 board
VC-86 board CN307
VA-64 board CN650
CARERA block
Zoom lens
VC-86, CD-53, AF boards DC-DC conveter
SS-134 board CN005
(6P)
SW-168 board
CN702
J702
SS-134 board CN004
FP-376 FLEXIBLE BOARD
VIDEO, AUDIO, POWER block (VA-64, SS-134, AU-99, FU-97 boards)
VIDEO IN/OUT
ZM board
(3P)
VC-86 board CN306
VC-86 board CN655
VC-86 board CN305
AF μCOM date reader jig (AF jig) (J-10)
Battery terminal
Adjustment remote control (J-9)
(6.5±0.1Vdc)
Stabilized power supply unit
Pattern generator
(IN)
(5.0±0.1Vdc)
Vectorscope
Color monitor
(OUT)
75Ω-terminated
Stabilized power supply unit

Fig. 3-3.

3-2-2. Caution

1) Setting of switches
   Unless otherwise specified, set the switches to the following position for making adjustments.
   1. CAMERA/PLAYER/POWER switch (S509 on FK-47 board)
      ......CAMERA
   2. STANDBY switch (S701 on SW-168 board)
      ......STANDBY
   3. AUTO LOCK switch (S217 on FD-44 board)
      ......OFF
   4. WHITE BALANCE button (S209 on FD-44 board)
      ......INDOOR mode ("·Ọ·" indication appears on EVF.)
   5. EXPOSURE button (S211 on FD-44 board)
      ......NORMAL
   6. SHUTTER SPEED button (S215 on FD-44 board)
      ......NORMAL mode (No indications of "100" "2000", etc. appear on EVF.)
2) Adjustment order
   As a rule, adjust in described order.
3) Objects
   1. Color bar chart (standard picture frame)
      When making Adjustments by the use of a color bar chart, adjust the picture frame as shown in Fig. 3-4. (Standard picture frame)

Color Bar Chart Standard Picture Frame

☆ Basically, adjust the color bar chart standard picture frame with the under-scanning monitor as shown in Fig. a.

1) **Place a black window with the horizontal width same as that of a color bar pattern, respectively on left and right sides of the screen. (A=B)**
2) Put together lower ends of the color pattern and under-scanning monitor in the vertical direction.

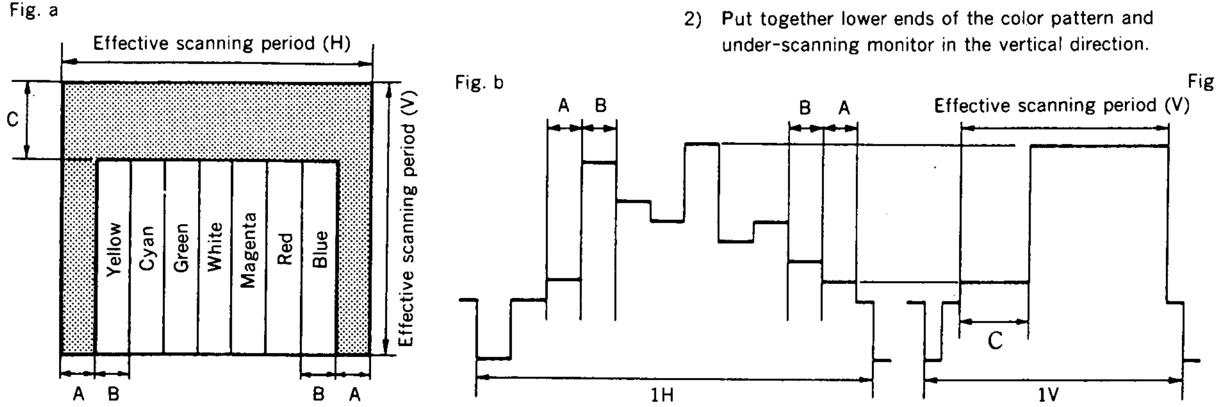


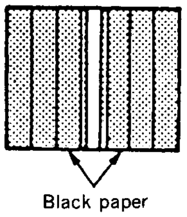
Fig. a
Effective scanning period (H)
C
Yellow
Cyan
Green
White
Magenta
Red
Blue
Effective scanning period (V)
A B
B A
Fig. b
A B
B A
1H
Fig. c
Effective scanning period (V)
C
1V

● **To photograph the color bar chart standard picture frame shown in Fig. a. adjust Output Y (CN307① on VC-86 board) as shown in Fig. b and c.**

Fig. 3-4.

   2. All white pattern
      Remove a color bar chart from the pattern box and set the zoom lever fully to the TELE side (68mm).
   3. High luminance pattern
      Prepare a high luminance pattern as shown in Fig. 3-5 and adjust the picture frame as shown in Fig. 3-6.
   4. Siements star (J-6080-875-A)
      orient a camera to have the siemens star center coincide with the monitor screen center on a monitor TV screen.

High luminance pattern


Black paper

Cover a color bar chart with black paper, except half the width of its white stripe. Then shoot the chart in this state.

Fig. 3-5.

High luminance pattern

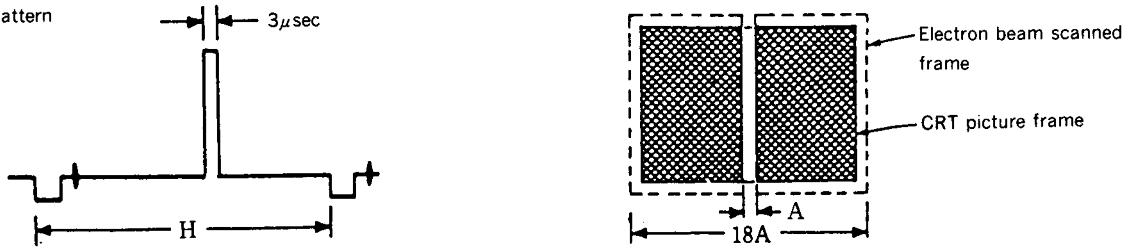

3μsec
H
Electron beam scanned frame
CRT picture frame
A
18A

Fig. a (camera output waveform of CPA pin Ⓐ8 on VC-86 board)

Fig. b (Picture of monitor TV screen)

By operating the camera zooming and orientation have the Fig. a output waveform output and the Fig. b monitor TV image displayed.

Fig. 3-6.

3-2-3. Adjustment Remote Control

In the camera block, the EVR (Electronic Variable Resistor) is used as an adjustment element in place of a conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (VC-86 board IC501). This microcomputer reads the data written in the non-volatile memory inside the microcomputer and sends it to the EVR. The EVR generates an adjustment voltage by D-A conversion of this data (8 bits per one adjustment point).

To adjust, the camera block, therefore, it is necessary to rewrite the adjustment data written in the non-volatile memory. The adjustment remote control is used for this purpose. The adjustment remote control performs bidirectional communications with the microcomputer in the camera block through a remote control signal line (LANC). UP/DOWN commands for adjustment page, address and data are sent from the adjustment remote control to the microcomputer in the camera block. Sent from the microcomputer in the camera block to the adjustment remote control are the adjustment page, address and data.

Note: The microcomputer IC in the adjustment remote controller except for new microcomputer (UPD7503G-C56-12) dose not allow the page selecting. Replace with the new microcomputer (8-759-148-35) in such a case.

1. Using the Adjustment Remote Control
   1) Connect the adjustment remote control to the REMOTE terminal (SW-168 board J701).
   (Shift the HOLD switch of the adjustment remote control to the HOLD position (SERVICE position).)
   2) Turn on the power for the main unit.
   3) If the connection is correct, the following is displayed on the adjustment remote control LCD. (The adjustment data varies from one set to another.)

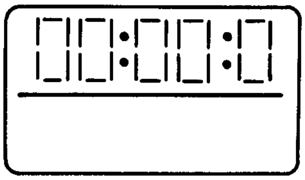


Fig. 3-7. (a)

   4) Specify your desired adjustment page by the adjustment remote control.
   Pressing the EDIT SEARCH (+) increments the adjustment page. Pressing the EDIT SEARCH (−) decrements it. The adjustment page is shown in the hexadecimal numbers and there are 16 of them from 1 to F. The CAMERA adjustment page is page F and Pressing the EDIT SEARCH (−) buttom one push.

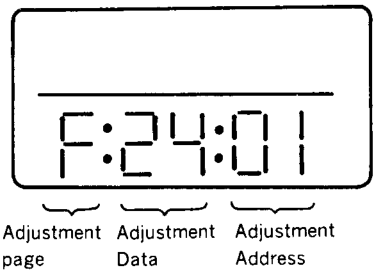


Fig. 3-7. (b)

   5) Specify your desired adjustment address by the adjustment remote control. Pressing the FF (▶▶) button increments the adjustment address, and pressing the REW (◀◀) button decrements it.
   (The adjustment address is shown in the decimal number and there are 256 of them from 00 to FF. The adjustment address corresponds to the output terminal of the EVR (IC301 on the VC-86 board, IC504 on the VC-86 board, and IC004 of the MX-10 board). Refer to Table 3-3 for adjustment of each address.)
   6) Make adjustment by increasing/decreasing the adjustment data.
   Pressing the PLAY (▶) button increases the adjustment data, and pressing the STOP (■) button decreases it.

- The adjustment data is shown in the hexadecimal number and assumes 256 kinds of values ranging from 00 to FF.

Hexadecimal No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Indication of LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal converted value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 3-1.

- The adjustment data corresponds to the output voltage of the EVR (IC301 on the VC-86 board, IC504 on the VC-86 board, and IC004 on the MX-10 board) as follows:

$$\left(\begin{array}{l}\text{MX-10 board IC004}: 2.0 \longleftrightarrow 5.0\text{ Vdc}\\ \text{VC-86 board IC301}: 0 \longleftrightarrow 5.0\text{Vdc}\\ \text{VC-86 board IC504}: 1.0 \longleftrightarrow 3.5\text{Vdc}\end{array}\right)$$

   7) Change the adjustment address with the FF (▶▶) or REW (◀◀) button in order to store the adjustment data into the non-volatile memory built in the EVR/AWB microcomputer (VC-86 board IC501).
   (If this operation is omitted, new adjustment data will not be stored into the non-volatile memory.)
   8) There is a function provided to make note of the last error cuased by the COUNTER RESET button during operation of the set even if the power is turned off. This LAST MEMO EMERGENCY (last error) can be cleared.

2. Cautions for Using the Adjustment Remote Control

Erroneous operation of the adjustment remote control may delete correct adjustment data. To avoid this, it is recommended to make note of all the adjustment data before adjustment and of new adjustment data every time adjustment of one item is completed.

3. List of Adjustment Addresses

Use the adjustment page F for the camera part adjustment of this unit.

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
01	MX-10 board IC004 pin ⑱	R CONT	Auto white balance adjustment	
02	MX-10 board IC004 pin ⑲	B CONT		
03	MX-10 board IC004 pin ②	C_1 GAIN	Matrix (3) C_1 gain adjustment	
04	MX-10 board IC004 pin ③	B GAIN	Pre-white balance adjustment	
05	MX-10 board IC004 pin ④	R GAIN		
06	MX-10 board IC004 pin ⑤	Y_2 GAIN	Matrix adjustment (2) Y_2 gain adjustment	
07	MX-10 board IC004 pin ⑥	Y_1 GAIN	Matrix adjustment (1) Y_1 gain adjustment	
08	MX-10 board IC004 pin ⑦	Y_H GAIN	Y_H level adjustment	
09	MX-10 board IC004 pin ⑧	R-Y GAIN	Color reproducibility adjustment	
0A	MX-10 board IC004 pin ⑨	B-Y GAIN		
0B	MX-10 board IC004 pin ⑫	R-Y HUE		
0C	MX-10 board IC004 pin ⑬	B-Y HUE		
0D	VC-86 board IC301 pin ⑱	SHP LEVEL	H aperture Adjustment	
0E	VC-86 board IC301 pin ⑲	Y LEVEL	White clip, Y level adjustments	
0F	VC-86 board IC301 pin ②	VAP GAIN	Matrix adjustment	
10	VC-86 board IC301 pin ③	SET UP	Set up adjustment	
11	VC-86 board IC301 pin ④	C LEVEL	Chroma level adjustment	
12	VC-86 board IC301 pin ⑤	V SUB CONT	V SUB adjustment	
13	VC-86 board IC301 pin ⑥	PG CONT	PG CONT adjustment	
14	VC-86 board IC301 pin ⑦	$Y\gamma$ CONT		
15	VC-86 board IC301 pin ⑧	WHITE CLIP	White clip adjustment	
16	VC-86 board IC301 pin ⑨	SYNC LEVEL	Sync level adjustment	
17	VC-86 board IC301 pin ⑫	BURST LEVEL	Burst level adjustment	
18	VC-86 board IC301 pin ⑬	MAX GAIN	Set up, Max gain adjustments	
19	VC-86 board IC504 pin ⑱	IRIS REF	Iris adjustment	
1A	VC-86 board IC504 pin ⑲	AGC REF	AGC adjustment	
1B	VC-86 board IC504 pin ②	HALL GAIN	Hall adjustment	
1C	VC-86 board IC504 pin ③	HALL OFFSET		
1D	VC-86 board IC504 pin ④	FADER LEVEL		
1E	VC-86 board IC504 pin ⑤	AE OFFSET	AE offset adjustment	
1F	VC-86 board IC504 pin ⑥	FADER CONT	Fader level adjustment	
20	VC-86 board IC504 pin ⑦	FOCUS SPEED		
21	VC-86 board IC504 pin ⑧	ZOOM SPEED		
22	VC-86 board IC504 pin ⑨	M IRIS CONT	Not used	
23	VC-86 board IC504 pin ⑫	M AGC CONT		
24	VC-86 board IC504 pin ⑬	———		

Table 3-2 (1).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
25		IN OUT		
26		M12-THR		
27		KATAMUKI		
28		FA-WM		
29		FA-BM		
2A		FH-WM		
2B		FH-BM		
2C		FA-SMH		
2D		FA-SML		
2E		FH-SMH		
2F		FH-SML		
30		LOW-F-SPEED		
31		MAN-F-SPEED		
32		STEP-A		
33		END-SENS-V		
34		ZOOM-POSI 1		
35		ZOOM-POSI 2		
36		ZOOM-POSI 3		
37		ZOOM-POSI 4		
38		ZOOM-POSI 5		
39		FOCUS-POSI 1		
3A		SEARCH-V		
3B		BACK RUSH 2		
3C		BACK RUSH MODE 3		
3D		ZOOM-TAN-MASK		
3E		ZOOM-END-V		
3F		ZOOM-MODOSI		
40		IRIS F1.7		
41		IRIS F2		
42		IRIS F2.4		
43		IRIS F2.8		
44		IRIS F3.4		
45		IRIS F4		
46		IRIS F4.8		

Table 3-2 (2).

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
47		IRIS F5.6		
48		IRIS F6.8		
49		IRIS F8		
4A		IRIS F9.6		
4B		IRIS F11		
4C		IRIS F14		
4D		IRIS F16		
4E		MODE 5 THR 3		
4F		FH-NG-COUNT		
50		TYUU WAKU		
51		YOGIRI-OUT		
52		MODE 5 THR 20 OUT		
53		AF IRIS IN OUT		
54		MACRO TIME OUT H		
55		MACRO TIME OUT L		
56		MACRO SEARCH		
57		SEISHI		
58		ZOOM-SPEED 1	High speed	
59		ZOOM-SPEED 2	Middle speed (Remote control)	
5A		ZOOM-SPEED 3	Low speed	
5B		ZOOM-SPEED 4		
5C		—		
5D		—		
5E		—		
5F		—		
60		IRIS REF-NOR	Standard AE level, Program AE level setting	
61		IRIS REF-PO		
62		IRIS REF-SP		
63		IRIS DATA 1	IRIS manual data adjustment	
64		GAIN-REF	Manual gain data adjustment	
65		GAIN-MAX		
66		EMG-AGC	Warning display level setting	
67		EMG-AGC-HYS		
68		EMG-AE		
69		EMG-AE HYS-H		

Table 3-2 (3).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
6A		————		
6B		MAXSHUT-PO (H)		
6C		MAXSHUT-PO (L)		
6D		MAXSHUT-SP (H)		
6E		MAXSHUT-SP (L)		
6F		REF-WIDTH		
70		————		
71		SHUT-MULTI (H)		
72		————		
73		SHUT-COUNT 1		
74		SHUT STEP-MULTI		
75		IRIS OPEN		
76		REF-TURBO		
77		————		
78		TURBO-WIDTH		
79		————		
7A		TURBO-TR (H)		
7B		————		
7C		SHUT-COUNT 2		
7D		SHUT-COUNT 3		
7E		————		
7F		————		
80		USER R-Y GAIN		
81		USER B-Y GAIN		
82		USER B-Y HUE		
83		USER R-Y HUE		
84		USER SHP LEVEL		
85		USER Y LEVEL		
86		————		
87		————		
88		————		
89		————		
8A		————		
8B		————		
8C		————		

Table 3-2 (4).

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
8D		————		
8E		————		
8F		————		
90		R3200 MSB		
91		R3200 LSB		
92		B3200 MSB		
93		B3200 LSB		
94		G3200 MSB		
95		G3200 LSB		
96		SHUTTER IN	Shutter IN/OUT adjustment	
97		SHUTTER OUT		
98		IRIS IN		
99		IRIS OUT		
9A		————		
9B		————		
9C		————		
9D		————		
9E		————		
9F		————		
A0		————		
A1		————		
A2		————		
A3		————		
A4		————		
A5		————		
A6		————		
A7		————		
A8		————		
A9		————		
AA		————		
AB		————		
AC		BTM SLP R		
AD		BTM SLP B		
AE		MDL SLP R		
AF		MDL SLP B		

Table 3-2 (5).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
B0		TOP SLP R		
B1		TOP SLP B		
B2		KEIKO R		
B3		KEIKO B		
B4		BTM UP		
B5		BTM DWN		
B6		MDL UP		
B7		MDL DWN		
B8		TOP UP		
B9		TOP DWN		
BA		KEIKO		
BB		KEIKO DWN		
BC		R TOP LMT		
BD		R DWN LMT		
BE		B TOP LMT		
BF		B IN TOP		
C0		B IN MAX		
C1		B OUT MIN		
C2		B OUT DWN		
C3		B DWN LMT		
C4		LL LMT		
C5		TM DIVID		
C6		BM DIVID		
C7		DELAY TM		
C8		FAST TM		
C9		OUT HYS OFF		
CA		OUT B HYS		
CB		———		
CC		———		
CD		———		
CE		———		
CF		———		
D0		SYSTEM	NTSC/PAL select	
D1		MODE W01		
D2		MODE W11		

Table 3-2 (6).

<table>
<tr><th>Adjust-ment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Memo Column</th></tr>
<tr><td>D3</td><td></td><td>MODE W21</td><td></td><td></td></tr>
<tr><td>D4</td><td></td><td>MODE W31</td><td></td><td></td></tr>
<tr><td>D5</td><td></td><td>MODE W41</td><td></td><td></td></tr>
<tr><td>D6</td><td></td><td>MODE W02</td><td></td><td></td></tr>
<tr><td>D7</td><td></td><td>MODE W12</td><td></td><td></td></tr>
<tr><td>D8</td><td></td><td>MODE W22</td><td></td><td></td></tr>
<tr><td>D9</td><td></td><td>MODE W32</td><td></td><td></td></tr>
<tr><td>DA</td><td></td><td>MODE W42</td><td></td><td></td></tr>
<tr><td>DB</td><td></td><td>MODE W03</td><td></td><td></td></tr>
<tr><td>DC</td><td></td><td>MODE W13</td><td></td><td></td></tr>
<tr><td>DD</td><td></td><td>MODE W23</td><td></td><td></td></tr>
<tr><td>DE</td><td></td><td>MODE W33</td><td></td><td></td></tr>
<tr><td>DF</td><td></td><td>MODE W43</td><td></td><td></td></tr>
<tr><td>E0</td><td></td><td>DISPLAY MODE</td><td>The following adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment data.</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>DISPLAY MODE
R, B, CONT</td></tr>
<tr><td>01</td><td>NEW R, B</td></tr>
<tr><td>02</td><td>R RATIO</td></tr>
<tr><td>03</td><td>B RATIO</td></tr>
<tr><td>04</td><td>R GAIN</td></tr>
<tr><td>05</td><td>B GAIN</td></tr>
<tr><td>06</td><td>RM DATA</td></tr>
<tr><td>07</td><td>GM DATA</td></tr>
<tr><td>08</td><td>BM DATA</td></tr>
<tr><td>09</td><td>R, B RATIO</td></tr>
<tr><td>0A</td><td>WHIT R, B</td></tr>
<tr><td>0B</td><td>R DATA</td></tr>
<tr><td>0C</td><td>G DATA</td></tr>
<tr><td>0D</td><td>B DATA</td></tr>
<tr><td>0E</td><td>R, B AIM</td></tr>
<tr><td>0F</td><td>ERROR</td></tr>
<tr><td>FF</td><td>R, B AWB</td></tr>
<tr><td>11</td><td>HALL DATA,
SHUTTER DATA</td></tr>
</table></td><td>00</td></tr>
<tr><td>E1</td><td></td><td>————</td><td></td><td></td></tr>
<tr><td>E2</td><td></td><td>————</td><td></td><td></td></tr>
</table>

Table 3-2 (7).

<table>
<tr><th>Adjust-ment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Memo Column</th></tr>
<tr><td>E3</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>E4</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>E5</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>E6</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>E7</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>E8</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>E9</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>EA</td><td></td><td>—</td><td></td><td></td></tr>
<tr><td>EB</td><td></td><td>MODE</td><td>The following adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment Data</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>NORMAL</td></tr>
<tr><td>01</td><td>F-HANTING</td></tr>
<tr><td>03</td><td>ZOOM-POSI</td></tr>
<tr><td>05</td><td>IRIS-POSI</td></tr>
<tr><td>0B</td><td>AGC-CONT</td></tr>
<tr><td>0D</td><td>FOCUS-POSI</td></tr>
<tr><td>11</td><td>SHUTTER IN/OUT</td></tr>
<tr><td>13</td><td>AE LEVEL</td></tr>
<tr><td>ED</td><td>FILTER-FHM</td></tr>
<tr><td>EF</td><td>FILTER-FAM</td></tr>
<tr><td>F1</td><td>FILTER-SFH L</td></tr>
<tr><td>F3</td><td>FILTER-SFH H</td></tr>
<tr><td>F5</td><td>FILTER-SFA L</td></tr>
<tr><td>F7</td><td>FILTER-SFA H</td></tr>
<tr><td>F9</td><td>FILTER-FA L</td></tr>
<tr><td>FB</td><td>FILTER-FH L</td></tr>
<tr><td>FD</td><td>FILTER-FA H</td></tr>
<tr><td>FF</td><td>FILTER-FH H</td></tr>
</table></td><td></td></tr>
<tr><td>EC</td><td></td><td>AWB MODE 3</td><td></td><td></td></tr>
<tr><td>ED</td><td></td><td>AWB MODE 2</td><td></td><td></td></tr>
<tr><td>EE</td><td></td><td>AWB MODE 1</td><td>The following auto white balance adjustment mode is selected by changing the adjustment data.
<table>
<tr><th>Adjustment Data</th><th>Adjustment Mode</th></tr>
<tr><td>00</td><td>AWB MODE 1</td></tr>
<tr><td>10</td><td>WB DIRECT</td></tr>
<tr><td>F0</td><td>WB FREE</td></tr>
<tr><td>01</td><td>3200k Data fetch 1</td></tr>
<tr><td>23</td><td>3200k Data fetch 2</td></tr>
<tr><td>D0</td><td>INITIAL SETTING ADJUSTMENT</td></tr>
</table></td><td></td></tr>
</table>

Table 3-2 (8).

Adjust-ment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Memo Column
EF		CAM ALON		
F0		————		
F1		————		
F2		————		
F3		————		
F4		————		
F5		————		
F6		————		
F7		————		
F8		————		
F9		————		
FA		————		
FB		————		
FC		————		
FD		————		
FE		————		
FF		————		

Table 3-2 (9).

3-2-4. Checkpoint Array

Most measurement points for adjustment of the camera block are concentrated on the checkpoint array of the VC-86 board. Solder a short lead wire, etc. to the terminal required for adjustment and connect an oscilloscope. Table 3-3 shows the terminal numbers and signal names of the checkpoint array.

Note: The CPA connector jig allows you to connect an oscilloscope easily.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	N.C	B1	N.C
A2	PG CONT	B2	N.C
A3	N.C	B3	Y LPF OUT
A4	N.C	B4	V SUB
A5	VAP OUT	B5	VAP SLICE
A6	TP	B6	N.C
A7	WB-G	B7	Y_H GAIN
A8	CAM Y	B8	Y_2 GAIN
A9	YH	B9	N.C
A10	CAM C	B10	GND
A11	YH OUT 1	B11	IRIS OUT

Table 3-3.

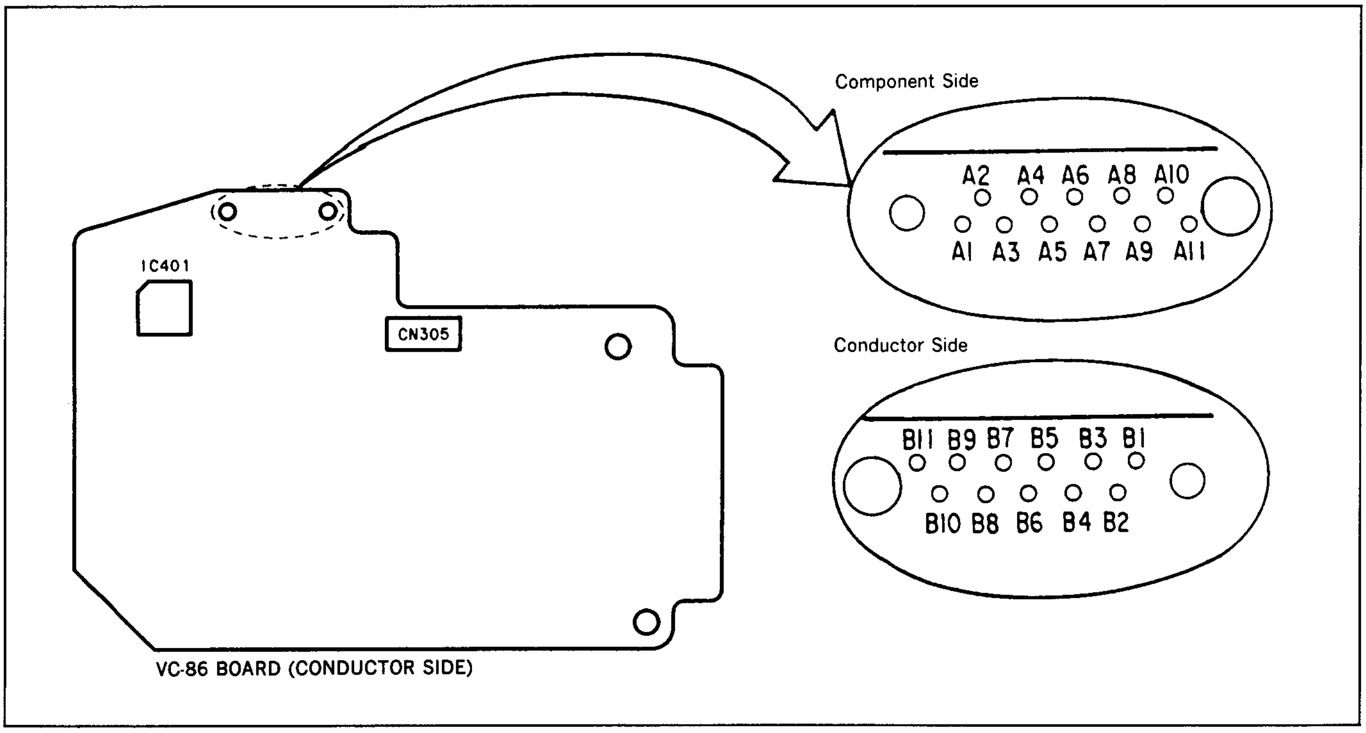

Component Side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Conductor Side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2
IC401
CN305
VC-86 BOARD (CONDUCTOR SIDE)

Fig. 3-8.

3-2-5. AF Microcomputer Data Reader Jig

The AF microcomputer data reader jig converts adjustment serial data outputted from the AF microcomputer (VC-86 board CN655) (different data are outputted depending on the adjustment mode, such as HALL (iris) state, focus state, focus motor speed, zoom ring position, etc.) into 2-digit hexadecimal numbers and indicates on the LED.

〔Connection〕

Connect as shown in the figure below :

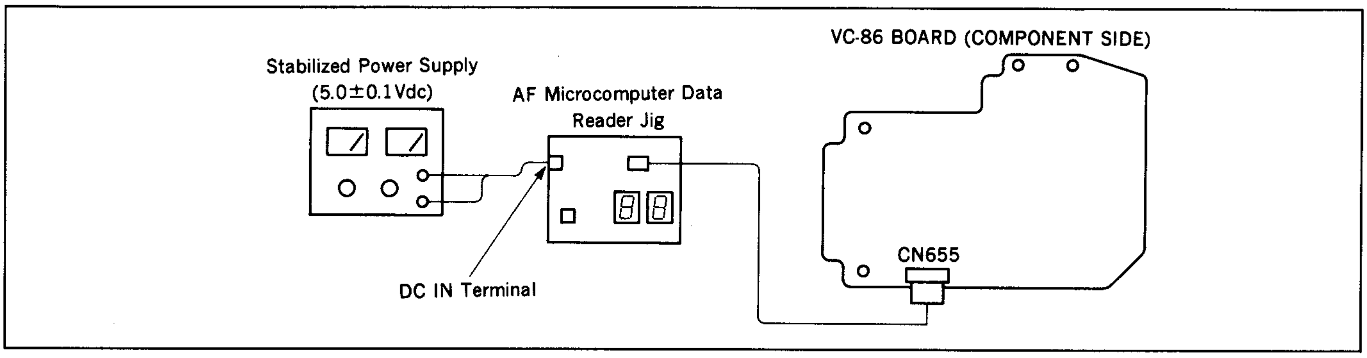

Stabilized Power Supply
(5.0±0.1Vdc)
AF Microcomputer Data Reader Jig
DC IN Terminal
VC-86 BOARD (COMPONENT SIDE)
CN655

Fig. 3-9.

3-2-6. Data Processing

In order to obtain adjustment data in some adjustment items, it is necessary to compute the display data (hexadecimal number) of the AF microcomputer data reader jig and adjustment remote control. In this case, convert the hexadecimal number into the decimal number before computation, convert its computed result back into the decimal number to assume it as the adjustment data. Table 3-4 shows a hexadecimal-decimal conversion table.

Hexadecimal — Decimal Conversion Table

Higher Digit of Hex. No. / Lower Digit of Hex. No.	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② ↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: Values in parentheses are those displayed on the AF microcomputer reader jig or adjustment remote control.

(Example) When the AF microcomputer reader jig or adjustment remote control displays "BD (bd)";
Since the higher digit of the hexadecimal number is B (b) and its lower digit is D (d), the decimal number to be obtained is "189" at an intersecting point of ① and ② in the table above.

Table. 3-4.

3-3. ADJUSTMENT OF CAMERA SYSTEM

- In principle, all adjustments must be made in accordance with Adjustment procedure.
- When replacing CCD imager, do not forget to adjust the camera system property.

3-3-1. Camera DC-DC Converter Voltage Check (VC-86 Board/CD-53 Board)

Measuring isntrument	Digital voltmeter
15V check	
Measurement point	CN101 pin ① (CD-53 Board)
Specified value	$15.0 \pm 0.2V_{DC}$
−9V check	
Measurement point	CN101 pin ② (CD-53 Board)
Specified value	$-9.00 \pm 0.15V_{DC}$
4.9V check	
Measurement point	CN101 pin ③ (CD-53 Board)
Specified value	$4.9 \pm 0.1V_{DC}$
CAM 4.9V check	
Measurement point	CN304 pin ④ (VC-86 Board)
Specified value	$4.9 \pm 0.1V_{DC}$

[Checking Method]

1) Each supply voltage must meet the specified value.

- **WIND ON/OFF**

This function is to turn off the ABL (Auto Back Light; Wind Pulse of the Center Point Photometry) when adjusting the camera part. All the adjustment to do was to input the SERVICE LANC to the page F when turning off the ABL in adjusting, however, you are informed that this unit has another procedure.

[Procedures]

1) Set the SERVICE LANC to the adjustment page 5. (The adjustment address has set to 00 and the adjustment data has set to 10.)
2) Set the adjustment data of the adjustment address 00 to 01. (The ABL is turned off.)
3) Set the adjustment address to 00 and the adjustment data to 10 when turning on the ABL.

Note : Turning off the power resets the ABL. turning on the power after that turns on the ABL. (The adjustment address 00 of the adjustment page 5 is set to the adjustment data 10.)

3-3-2. EVR Initial Setting of Adjustment Page F.

Set to the following initial settings of the adjustment data only when the CCD IMAGER was replaced.
Make initial setting of adjustment data when the EVR/AWB microcomputer is replaced.
(Pre-replacement microcomputer data will do.)

Adjustment Address	Adjustment Data Initial Value
0E (Y LEVEL)	9C
0F (VAP GAIN)	90
10 (SET UP)	7E
12 (VSUB CONT)	3A
13 (PG CONT)	5A
14 (Yγ CONT)	93
15 (WHITE CLIP)	FF
18 (MAX GAIN)	E0
19 (IRIS REF)	4C
1F (FADER CONT)	00
25 (IN OUT)	00
26 (M12 THR)	30
27 (KATAMUKI)	04
28 (FA WM)	03
40 (IRIS F1.7)	61
41 (IRIS F2)	7F
42 (IRIS F2.4)	93
43 (IRIS F2.8)	A3
44 (IRIS F3.4)	AE
45 (IRIS F4)	B7
46 (IRIS F4.8)	BD
47 (IRIS F5.6)	C2
48 (IRIS F6.8)	C5
49 (IRIS F8)	C8
4A (IRIS F9.6)	CA
4B (IRIS F11)	CD
4C (IRIS F14)	D0
4D (IRIS F16)	D4
58 (ZOOM-SPEED 1)	94
59 (ZOOM-SPEED 2)	55
5A (ZOOM-SPEED 3)	2B
5B (ZOOM-SPEED 4)	53
5C	00
5D	02
60 (IRIS REF NOR)	60
61 (IRIS REF PO)	60
62 (IRIS REF SP)	60

Adjustment Address	Adjustment Data Initial Value
63 (IRIS DATA 1)	C2
64 (GAIN-REF)	30
65 (GAIN-MAX)	D0
66 (EMG AGC)	90
67 (EMG-AGC-HYS)	05
68 (EMG-AE)	50
69 (EMG AE HYS-H)	10
6B (MAX SHUT-PO (H))	00
6C (MAX SHUT-PO (L))	CF
6D (MAX SHUT-SP (H))	00
6E (MAX SHUT-SP (L))	E6
6F (REF-WIDTH)	0C
70	00
71 (SHUT-MULTI (H))	40
73 (SHUT-COUNT 1)	06
74 (SHUT STEP-MULTI)	01
75 (IRIS-OPEN)	20
76 (REF-TURBO)	40
78 (TURBO-WIDTH)	0C
7A (TURBO-TR (H))	0C
7C (SHUT-COUNT 2)	01
7D (SHUT-COUNT 3)	01
80 (USER R-Y GAIN)	10
81 (USER B-Y GAIN)	0D
82 (USER B-Y HUE)	0D
83 (USER R-Y HUE)	0C
84 (USER SHP LEVEL)	0A
85 (USER Y LEVEL)	0C
96 (SHUTTER IN)	B1
97 (SHUTTER OUT)	8B
98 (IRIS IN)	A7
99 (IRIS OUT)	B7
AC (BTM SLP R)	48
AD (BTM SLP B)	78
AE (MDL SLP R)	60
AF (MDL SLP B)	40
B0 (TOP SLP R)	66
B1 (TOP SLP B)	18
B2 (KEIKO R)	66
B3 (KEIKO B)	18
B4 (BTM UP)	C2
B5 (BTM DWN)	A0
B6 (MDL UP)	AD
B7 (MDL DWN)	96
B8 (TOP UP)	78
B9 (TOP DWN)	60
BA (KEIKO)	6C
BB (KEIKO DWN)	60
BC (R TOP LMT)	6E
BD (R DWN LMT)	21
BE (B TOP LMT)	8C
BF (B IN TOP)	65
C0 (B IN MAX)	5C
C1 (B OUT MIN)	5C
C2 (B OUT DOWN)	4A
C3 (B DOWN LMT)	1B
C4 (LL LMT)	06
C5 (TM DIVID)	5C
C6 (BM DIVID)	39
C7 (DELAY TM)	07
C8 (FAST TM)	40
C9 (OUT HYS OFF)	0E
CA (OUT B HYS)	07
D0 (SYSTEM)	01
EC (AWB MODE 3)	01
ED (AWB MODE 2)	00
EE (AWB MODE 1)	00
EF (CAM ALON)	00

Table. 3-5.

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment data for each adjustment address to the initial value with the adjustment remote control.
3) Change the adjustment address in order to memorize the last adjustment data.

3-3-3. Prime Oscillation Adjustment (CD-53 Board)

Object	Color bar chart standard picture frame
Measurement point	DT-77 board pin ③ (CL143)
Measuring instrument	Frequency counter
Adjustment element	CT122
Spehified value	14187500±71Hz

Note : Connect the frequency counter through a buffer amplifier (Oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 14187500±71Hz with CT122.

3-3-4. PLL Adjustment (CD-53 Board)

Object	Optional
Measurement point	See Fig. 3-10.
Measuring instrument	Digital voltmeter
Adjustment element	CT121
Specified value	2.5±0.2Vdc

[Adjustment Method]

1) Adjust to 2.5±0.2Vdc with CT121.

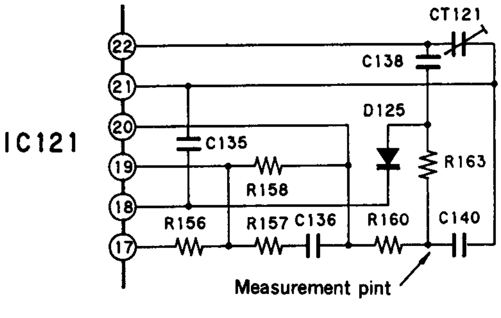


Fig. 3-10.

3-3-5. Flange Back Adjustment

Object	Siemens star (Position located 2 meters forward from the front of lens)
Measurement point	Checked with a monitor TV.
Measuring instrument	Checked with a monitor TV.
Adjustment element	Adjust screw
Tools	Screw driver

[Adjustment Method]

1) Set AUTO LOCK switch (FD-44 board S217) to "Manual" position (Lower side.)
2) Set the siemens star at the position 2 meters forward from the front of lens.
3) Adjust the position of camera block in such a way that the center of siemens star displayed on the monitor screen coincides with the center of monitor screen.
4) Make sure that the lens zoom lever smoothly moves to the extreme end of WIDE (8.5mm) and the extreme end of TELE (68mm) and then set the lever at the extreme end of WIDE (make sure that the zooming operation is functioning on the monitor screen at this time).
5) Press the PROGRAM AE button. (FD-44 board S210)
6) Press the EXPOSURE button (FD-44 board S211).
7) Open the IRIS by operating the CONTROL switch (FD-44 board S210).
8) The end surface of "∞" side of stopper rubber should be set on the center of the 3 lines marked on the main lens cylinder (Refer to Fig. 3-11).

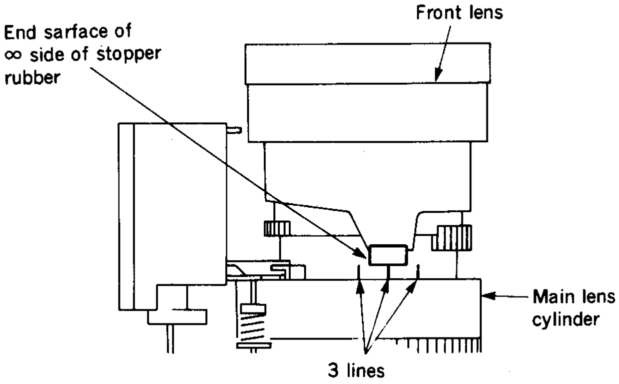


Fig. 3-11.

9) Loosen the setscrew (Refer to Fig. 3-12).
10) Insert a minus screw driver through the hole on rear lens cylinder and slightly turn the master lens frame with the edge of screw driver.

11) By turning the adjust screw, set the focus until the chart contrust becomes maximum (keep the setscrew loose at this time).
12) Readjust the focus by turning the focus ring.
13) Make sure that the ends of ∞ side of stopper rubber are kept within the range of 3 lines marked on the main lens cylinder (If not within the range, repeat the above 8) and 9)).
14) While bolding the adjust screw, thus preventing it from turning, tighten the setscrew [If the position deviates, repeat the process starting from 6)]
15) Repeat the above 10) and 11) and check.

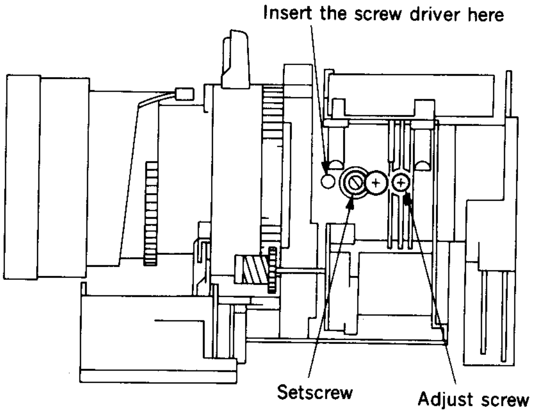

Insert the screw driver here
Setscrew
Adjust screw

Fig. 3-12.

3-3-6. AF Measurement Distance Adjustment

Object	AF measurement adjust chart (Refer to Fig. 3-13)
Measurement point	Check with monitor TV.
Measuring instrument	Check with monitor TV.
Adjustment element	Measured distance adjust screw
Tools	Hexagonal wrench (1.25mm)

[Adjustment Method]

1) Set the chart at 2 meters forward from the front of lens.
2) Set the lens zoom lever on the TELE terminal and set the center of monitor on the center of chart.
3) Insert the hexagonal wrench into the hole located on the lower side of unit and set the focus by turning AF adjust screw (Refer to Fig. 3-14).
4) Remove the focus ring by turning it with your hand ensuring no overrunning of focus, that is, the focus is not deviated after it is properly set once when the ring is turned to ∞ side and hand is released or when the ring is turned to 1.2m side and the hand is released.
5) When the focus overruns in the above 4), repeat the above 3) and 4).
6) Close the AF adjust hole of cabinet.

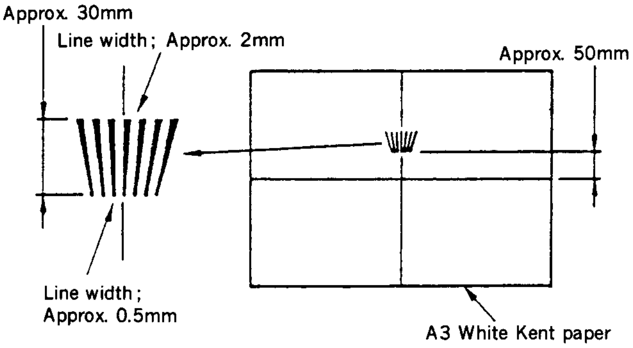

Approx. 30mm
Line width; Approx. 2mm
Approx. 50mm
Line width; Approx. 0.5mm
A3 White Kent paper

Fig. 3-13.

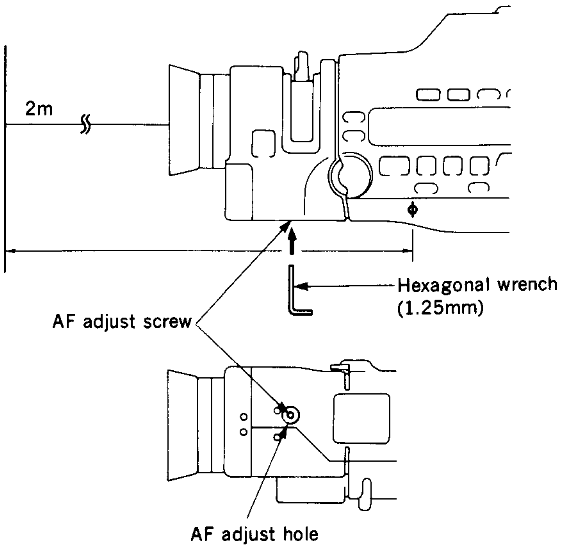

2m
AF adjust screw
Hexagonal wrench (1.25mm)
AF adjust hole

Fig. 3-14.

3-3-7. Sync. Level Adjustment (VC-86 Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin(A8)(CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	16 (SYNC LEVEL)
Specified value	150±5mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 16 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the sync. level to 150±5mV.
3) Change the adjustment address in order to store the adjustment data.

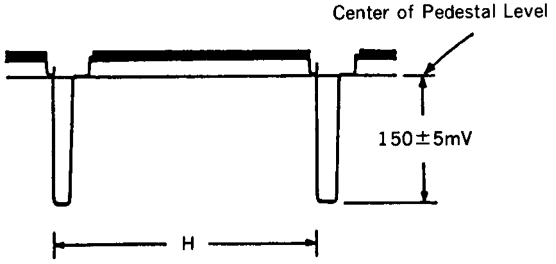
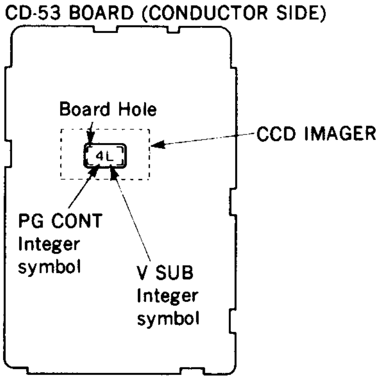


Fig. 3-15.

3-3-8. PG CONT/V SUB Adjustment (CD-53/VC-86 Boards)

Note: PG CONT specified voltage and V SUB specified voltage are indicated by the two digits on CCD imager.



● PG CONT

Integer symbol	Voltage (V)
0	0.5
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

● V SUB

Integer symbol	Voltage (V)	Integer symbol	Voltage (V)	Integer symbol	Voltage (V)
A	7.0	J	11.0	S	15.0
B	7.5	K	11.5	T	15.5
C	8.0	L	12.0	U	16.0
D	8.5	M	12.5	V	16.5
E	9.0	N	13.0	W	17.0
F	9.5	P	13.5	X	17.5
G	10.0	Q	14.0	Y	18.0
H	10.5	R	14.5	Z	18.5

Example: For 「4L」 display,
•PG CONT=2.5V
•V SUB=12.0V

Fig. 3-16.

A. PG CONT Adjustment

Object	Not used
Measurement point	Checkpoint array pin(A2)(PG CONT)
Measuring instrument	Digital voltmeter
Adjustment page	F
Adjustment address	13 (PG CONT)
Specified value	(CCD imager specified voltage) ±0.1V_{dc}

[Adjustment Method]

1) Set the adjustment page F and the adjustment address 13 with the adjustment remote control.
2) Change the adjustment data to be (CCD imager specified voltage) ± 0.1Vdc with the adjustment remote control.
3) Change the adjustment address to store the adjustment data.

B. V SUB Adjustment

Object	Not used
Measurement point	Checkpoint array pin B4 (V SUB)
Measuring instrument	Digital voltmeter
Adjustment page	F
Adjustment address	12 (V SUB)
Specified value	(CCD imager specified voltage) ±3%

[Adjustment Method]

1) Set the adjustment page F and the adjustment address 12 with the adjustment remote control.
2) Change the adjustment data to be (CCD imager specified voltage) ±3% with the adjustment remote control.
3) Change the adjustment address to store the adjustment data.

3-3-9. Iris Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Filter	ND filter 0.5 (0.4+0.1)
Measurement point	Checkpoint array pin B11 (IRIS OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	19 (IRIS)
Specified value	150±10 mV

[Adjustment Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control. (WIND OFF).
2) Select the adjustment page F and the adjustment address 19 with the adjustment remote control.
3) With no ND filter attached, change the adjustment data with the adjustment control to adjust the IRIS OUT signal level to 150±10 mV.
4) Attach the ND filter 0.5 (0.4+0.1) in front of the lens and check that the signal level changes smoothly.
5) Remove the ND filter and check that the signal level is 150±20 mV.
6) When the specified value is not met, repeat the steps 3) through 5).
7) Change the adjustment address in order to store the adjustment data.

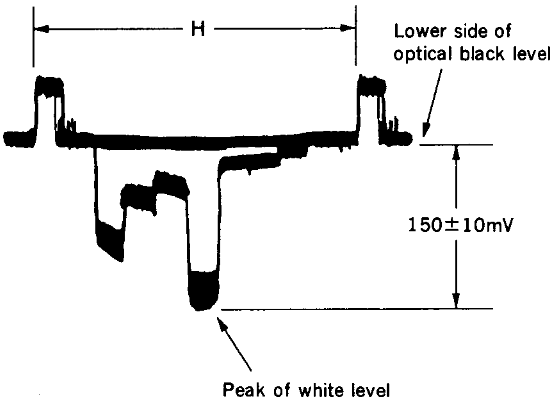


Fig. 3-17.

3-3-10. Hall Adjustment (VC-86 Board)

Object	White pattern standard frame All black (Cover the lens with a black cap.)
Measurement point	CN801
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	1B (HALL GAIN) 1C (HALL OFFSET)
Specified value	White pattern imaging: C8±01 ALL black imaging: 03±02

[Adjustment Method]

1) Set the adjustment page F with the adjustment remote control.
2) Set the adjustment address EB and the adjustment data 05 with the adjustment remote control.
3) Set the adjustment address 1B with the adjustment remote control.
   Pick up the image of the all white pattern in the zoom position of the color bar standard frame, set the adjustment data C8±01.
   Cover the lens with a black cap, select all black imaging, and set the adjustment data 03±02.
4) Set the adjustment address 1C with the adjustment remote control.
   Pick up the image of the all white pattern in the zoom position of the color bar standard frame, set the adjustment data C8±01.
   Put the black cap on the lens, select all black imaging, and set the adjustment data 03±02.
5) Repeat steps 2) and 3) until the specifications are satisfied.
6) Set the adjustment address EB and the adjustment data 00 with the adjustment remote control.
7) Change the adjustment address is order to store the adjustment data.

3-3-11. AGC Adjustment (VC-86 Board)

Note : When there is much noise, measure by inserting 5.6kΩ resistance.

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin(B3)(Y LPF OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	1A (AGC)
Specified value	180±5 mV

[Adjustment Method]

1) Select the adjustment page 5 and the adjustment address 00, data 01 with the adjustment remote control.
2) Select the adjustment page F and the adjustment address 1A with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to set the Y (LPF) signal level to 180±5 mV.
4) Change the adjustment address in order to store the adjustment data.

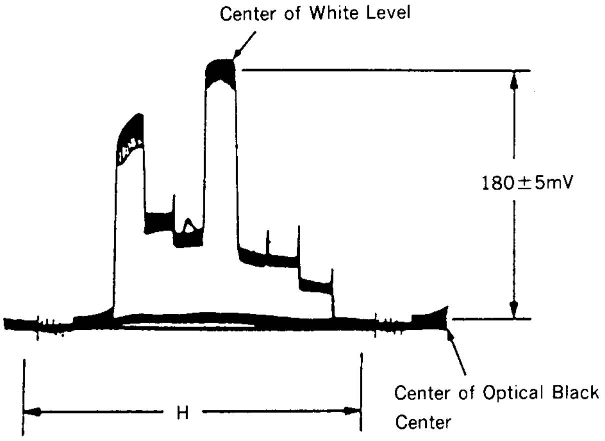


Fig. 3-18.

3-3-12. Manual Gain Data Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	64 (GAIN REF)

[Adjustment Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
2) Select the adjustment page F and set the aijustment address EB, data OB with the adjustment remote control.
3) Store the value of the AF microcomputer data reader jig to the adjustment address 64.
4) Select the adjustment address EB and set the adjustment data 00 with the adjustment remote control.
5) Change the adjustment address in order to store the adjustment data.

3-3-13. Matrix Adjustment

(1) Y_1 Gain Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin(A5)(VAP OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	07 (Y_1 GAIN) 0F (VAP GAIN)
Specified value	$Y_0 - Y_1 = 0 \pm 5$mV

[Preparation]

1) Short the checkpoint array pin(B8)(Y_2 Gain) and pin(B5) (VAP SLICE) with GND.

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjustment address 0F and preset the adjustment data 00 with the adjustment remote control. (VAP GAIN : MAX)
3) Select the adjustment address 07 with the adjustment remote control.
4) Change the adjustment data and set the $Y_0 - Y_1$ waveform to be a straight line. (There should not be difference.)
5) Change the adjustment address in order to store the adjustment data.
6) Open the checkpoint array pin(B8)and pin(B5).

Note : After the adjustment, be sure to adjust the matrix (2) Y_2 Gain Adjustment.

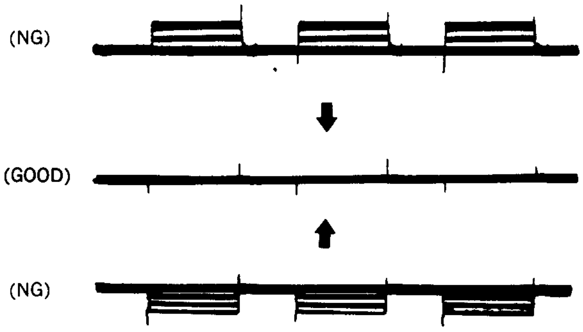


Fig. 3-19.

(2) Y_2 Gain Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin(A5)(VAP OUT)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	06 (Y_2 GAIN) 0F (VAP GAIN)
Specified value	0±5mV

[Preparation]

1) Short the chickpoint array pin(B5)(VAP SLICE) with GND.

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjustment address 0F and preset the adjustment data 00 with the adjustment remote control. (VAP GAIN : MAX)
3) Select the adjustment address 06 with the adjustment remote control.
4) Change the adjustment data and set the $(Y_1-\frac{Y_0+Y_2}{2})$ waveform to be a straight line. (There should not be difference.)
5) Select the adjustment address 0F and set the adjustment data 90 with the adjustment remote control.
6) Change the adjustment address in order to store the adjustment data.
7) Open the checkpoint array pin(B5).

Note : After the adjustment, be sure to adjust the matrix (3) C_1 Gain Adjustment.

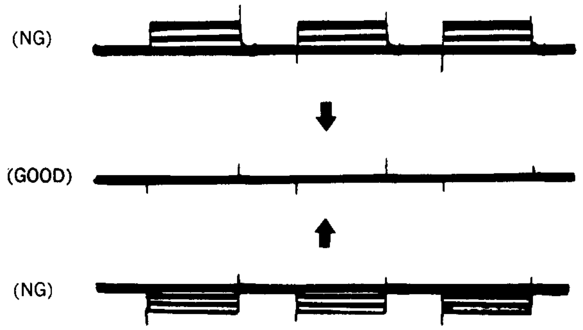


Fig. 3-20.

(3) C_1 Gain Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	J650 (VIDEO OUT)
Measuring instrument	Vectorscope
Adjustment page	F
Adjustment address	03 (C_1 GAIN)
Specified value	Minimize the divided bright point.

[Adjustment Method]

1) Select the adjustment page 5 and the adjustment address 00, data 01 with the adjustment remote control.
2) Select the adjustment page F and the adjustment address 03 with the adjustment remote control.
3) Change the adjustment data to coincide each color bright point.
4) Change the adjustment address in order to store the adjustment data.

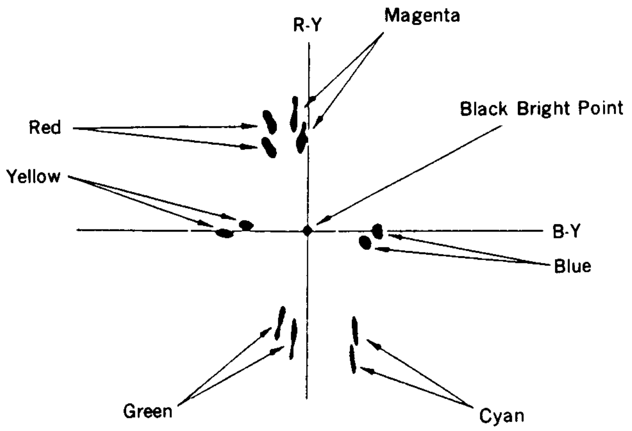


Fig. 3-21.

3-3-14. Y_H Level Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin Ⓐ6 (TP)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	08 (Y_H GAIN)
Specified value	0±5mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 08 with the adjustment remote control.
2) Change the adjustment data by the adjustment remote control in order that the output is a straght line. (There should not be difference : 0+5mV)
3) Change the adjustment address in order to store the adjustment data.

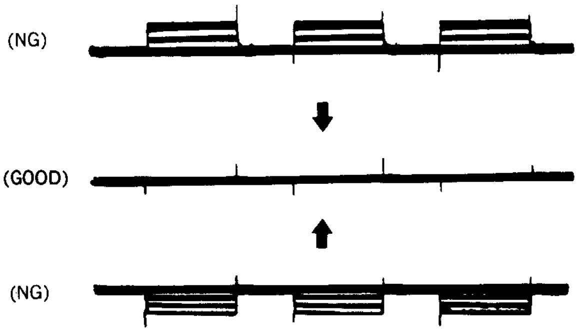


Fig. 3-22.

3-3-15. Chroma Level Adjustment (VC-86 Borad)

Object	Color bar chart standard picture frame
Measurement point	Checkpoint array pin Ⓐ7 (WB-G)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	11 (C LEVEL)
Specified value	320±20mV

[Adjustment Method]

1) Select the adjustment page 5 and the adjustment address 00, data 01 with the adjustment remote control.
2) Select the adjustment page F and the adjustment address 11 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to adjust the white level to 320±20 mV.
4) Change the adjustment address in order to store the adjustment data.

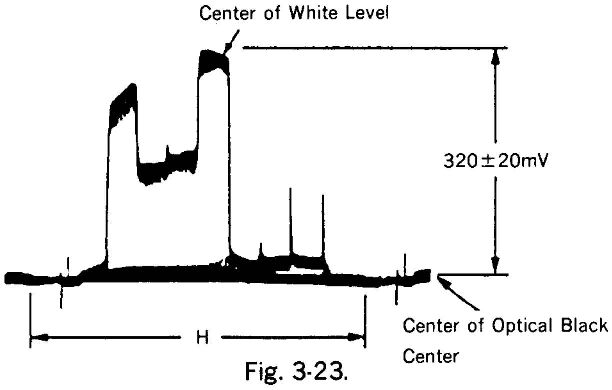


Fig. 3-23.

3-3-16. Burst Level Adjustment (VC-86 Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN307 pin ③ (C OUT) or checkpoint array pin (A10) (CAM C)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	17 (BURST LEVEL)
Specified value	150±5mVp-p

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 17 with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to adjust the burst level to 150±5mVp-p.
3) Change the adjustment address in order to store the adjustment data.

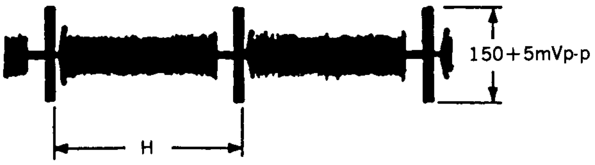


Fig. 3-24.

3-3-17. Pre-white Balance Adjustment

Object	All white pattern
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Adjustment page	F
Adjustment address	05 (R GAIN) 04 (B GAIN)
Specified value	The center of a white bright point must be within a circle of ϕ 1 mm centering around the origin

[Adjustment Method]

1) Maximize the gain of vectorscope.
2) Select the adjustment page F and the adjustment address 05 with the adjustment remote control.
3) Change the adjustment data with the adjustment remote control to coincide the white bright point with the origin.
4) Select the adjustment address 04.
5) Change the adjustment data to coincide the white bright point with the origin.
6) Repeat the steps 2) through 5).
7) Return the gain of vectorscope to CAL, and make sure that center of the bright point is located inside a circle of 1 mm diameter apart from the origin.
8) Change the adjustment address in order to store the adjustment data.

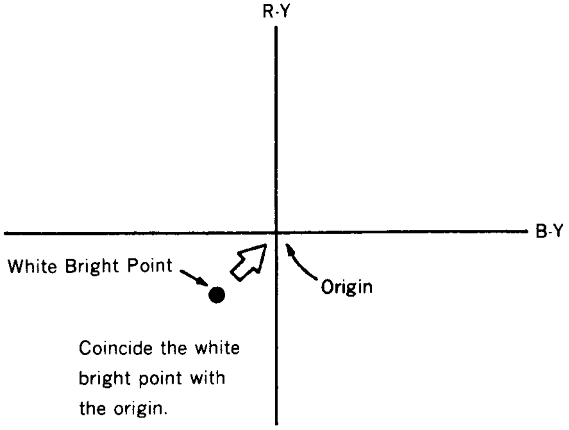


Fig. 3-25.

3-3-18. Color Reproducibility Adjustment

Object	Color bar chart standard picture frame
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Adjustment page	F
Adjustment address	09 (R-Y GAIN) 0A (B-Y GAIN) 0B (R-Y HUE) 0C (B-Y HUE)
Specified value	All color bright points must be within a color reproduction frame.

Note : The Burst Level Adjustment and the Pre-white Balance Adjustment must have been completed.

[Adjustment Method]

1) Set the bright point of the burst to the position of 75% with the GAIN control of the vectorscope.
2) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
3) Select the adjustment page F with the adjustment remote control.
4) Change the adjustment data of each adjustment address with the adjustment remote control to collect all the color bright points within the color reproduction frame.
5) Change the adjustment address in order to store the adjustment data.

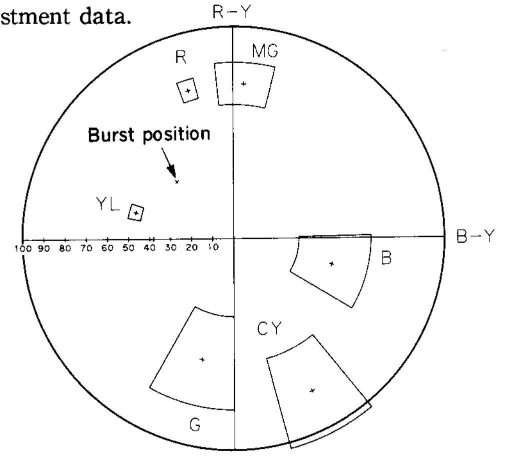


Fig. 3-26.

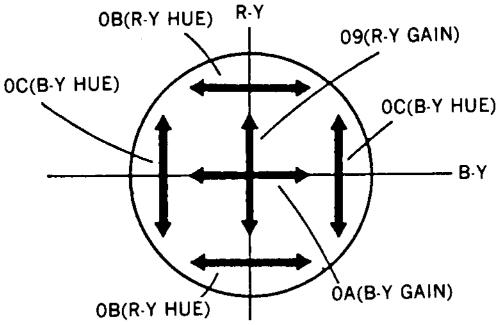


Fig. 3-27. Adjustment Addresses and Bright Point Moving Directions

3-3-19. White Clip Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin(A8)(CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	15 (WC) 0E (Y LEVEL)
Specified value	400±10mV

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjutment address 0E with the adjustment remote control, make note of the adjustment data of this address (data G), and then, set the adjustment data to FF.
3) Set the adjustment address to 15 with the adjustment remote control.
4) Change the adjustment data with the adjustment remote control to adjust the white clip level to 400±10mV.
5) Select the adjustment address 0E and enter to adjustment data F.
6) Change the adjustment address in order to store the adjustment data.
7) Make Y level adjustment as described in 3-3-20.

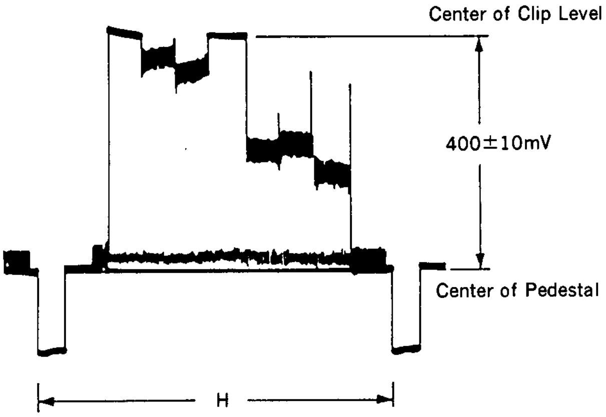


Fig. 3-28.

3-3-20. Y Level Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin(A8)(CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	0E (Y LEVEL)
Specified value	330±5mV

[Adjustment Method]

1) Check that the specified value in "3-3-19 White Clip Adjustment" is met.
2) Select the adjustment page 5 and the adjustment address 00, data 01 with adjustment remote control.
3) Select the adjustment page F and the adjustment address 0E with the adjustment remote control.
4) Change the adjustment data with the adjustment remote control and adjust the Y signal level to 330±5mV.
5) Change the adjustment address in order to store the adjusment data.

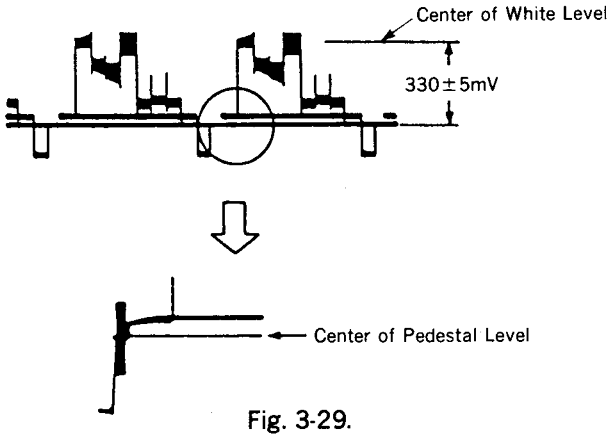


Fig. 3-29.

3-3-21. H Aperture Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin(A8)(CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	0D (SHP LEVEL)
Specified value	40±5mV

[Adjustment Method]

1) Select the adjustment page F and the adjustment address 0D with the adjustment remote control.
2) Change the adjustment data with the adjustment remote control to set the aperture level (lower peak between "green" and "white") to a point 40±5mV above the pedestal level.
3) Change the adjustment address in order to store the adjustment data.

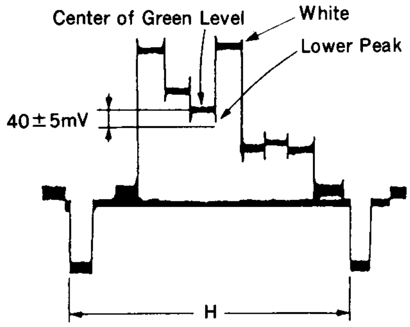


Fig. 3-30.

3-3-22. Max Gain Adjustment (VC-86 Board)

Object	Color bar chart standard picture frame
Filter	ND filter 2.8 (1.0+1.0+0.4+0.4)
Measurement point	CN307 pin① (Y OUT) or checkpoint array pin(A8)(CAM Y)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	18 (MAX GAIN)
Specified value	100±5mV

[Adjustment Method]

1) Cover the lens with the ND filter 2.8 (1.0+1.0+0.4+0.4).
2) Select the adjustment page F and the adjustment address 18 with the adjustment remote control.
3) Change the adjustment address with the adjustment remote control to adjust the Y signal level to 100±5mV.
4) Change the adjustment address in order to store the adjustment data.

Note : Although the ND filter is combined by using 4 pcs, if your ND filter is combined by using 3 pcs or less, resulting in 2.8, this combination should be available.

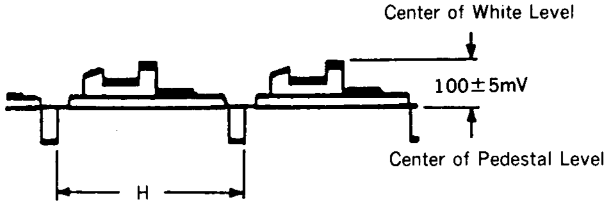


Fig. 3-31.

3-3-23. Warning Display Level Setting (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	66 (EMG AGC)

[Setting Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
2) Set the adjustment page F with the adjustment remote control.
3) Set the adjustment address EB and the adjustment data 0B with the adjustment remote control.
4) Turn off the AUTO LOCK switch (FD-44 board S217)
5) Push the EXPOSURE button (FD-44 boamd S211) and adjust to「+9 dB」with the CONTROL switch (FD-44 board S210).
6) Input the value of the AF microcomputer data reader jig to the adjustment address 66.
7) Set the adjustment address EB and the adjustment adress 00 with the adjustment remote control.
8) Change the adjustment address in order to store the adjustment data.

3-3-24. AE Offset Adjustment (VC-86 Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment adress	1E (AE OFFSET) EB (MODE)
Specified value	The minimum in the range from 01 to 06

[Adjustment Method]

1) Make all black. (Cover the lens with a black cap)
2) Select the adjustment page F and set the adjustment address EB, data 13 with the adjustment remote control.
3) Set the adjustment address 1E with the adjustment remote control.
4) Change the adjustment data so that the value of the AF microcomputer data reader jig is the minimum in the range from 01 to 06.
5) Change the adjustment address in order to store the adjustment data.
6) After this adjustment,「Standard AE Level, Program AE Level Setting」should be performed.

3-3-25. Standard AE Level, Program AE Level Setting (VC-86 Board)

Object	Color bar chart standard picture frame
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	60 (IRIS REF NOR) 61 (IRIS REF PO) 62 (IRIS REF SP)
Specified value	$(D_{60}-D_{AE\ OFFSET})>59$

[Adjustment Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with adjustment remote control.
2) Store the value of the AF microcomputer data reader jig to the adjustment address 60. (This adjustment data of the adjustment address is set to D_{60}.)
3) Calculate the following formula and check that each value is over 59.

$$(D_{60}-D_{AE\ OFFSET})>59$$

D_{60} : Adjustment data of the adjustment address 60.
$D_{AE\ OFFSET}$: Adjustment data of the "AE Offset Adjustment".

4) After checking, store the value of (D_{60}—0C) to the adjustment address 61 and 62.
5) After the adjustment, set the adjustment address EB and the adjustment data 00 with the adjustment remote control.
6) Change the adjustment address in order to store the adjustment data.

3-3-26. Manual Iris Data Adjustment (VC-86 Board)

Object	White pattern standard picture frame
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	63 (IRIS DATA 1)
Specified value	C8±01

[Adjustment Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
2) Set the adjustment page F with the adjustment remote control.
3) Set the adjustment address EB and the adjustment data 05 with the adjustment remote control.
4) Turn off the AUTO LOCK switch (FD-44 board S217).
5) Push the EXPOSURE button (FD-44 board S211) and adjust to 「F8」 with the CONTROL switch (FD-44 board S210).
6) Change the adjustment data of the adjustment address 63 so that the value of the AF microcomputer data reader jig is C8±01.
7) Set the adjustment address EB and the adjustment data 00 with the adjustment remote control.
8) Change the adjustment address in order to store the adjustment data.

3-3-27. AE Check

[Preparation]

1) Turn off the AUTO LOCK switch (FD-44 board S217).

Note : Be sure to check in the order to 1 → 2.

1. Iris Preceding Mode Check (VC-86 Board)

Object	White pattern standard picture frame All black (Cover the lens with a black cap.)
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig and a monitor screen
Adjustment page	F
Specified value	When the object is all black on condition of the iris F4, the ▶ mark on the monitor screen should be flashing and the value of the AF microcomputer data reader jig should be FF.

[Checking Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
2) Set the adjustment page F and set the adjustment address EB, data 11 with the adjustment remote control.
3) Set the iris preceding mode with the PROGRAM AE button. (FD-44 board S212)
4) Adjust to 「F4」 with the CONTROL switch (FD-44 board S210).
5) After two seconds, the ▶ mark on the monitor screen should not be flashing.
6) Check that this value of the AF microcomputer data reader jig is 81 to FE.
7) Make all black on the condition of 「F4」 (cover the lens with a black cap.)
8) After two seconds, check that the ▶ mark on monitor screen is flashing.
9) Check that this value of the AF microcomputer data reader jig is FF.
10) Change the adjustment address in order to store the adjustment data.
11) 「Shutter Preceding Mode Check」 should be performed.

2. Shutter Preceding Mode Check (VC-86 Board)

Object	All black (Cover the lens with a black cap.)
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig and a monitor
Adjustment page	F
Specified value	The value of the AF microcomputer data reader jig should be FF.

[Checking Method]

1) Set the adjustment page F with the adjustment remote control.
2) Make all black (cover the lens with a black cap).
3) Set the shutter preceding mode with the PROGRAM AE button. (FD-44 board S212)
4) Check that the value of the AF microcomputer data reader jig is FF.
5) Check that the ▶ mark on the monitor screen is not flashing.

Note : After checking AE, set the adjustment address EB and the adjustment data 00. (Change the adjustment address in order to store the adjustment data.)

3-3-28. Brightness Mode Check (VC-86 Board)

Object	White pattern standard picture frame All black (Cover the lens with a black cap.) Color bar chart standard picture frame
Filter	ND filter 2.6 (1.0+1.0+0.3+0.3)
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig Oscilloscope
Adjustment page	F
Adjustment address	EB (MODE)
Specified value	C8±02 01 to 07 105±20mV

[Adjustment Method]

1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
2) Take a picture of the white pattern standard picture frame.
3) Select the adjustment page F and set the adjustment address EB, data 05 with the adjustment remote control.
4) Turn off the AUTO LOCK switch (FD-44 board S217).
5) Push the EXPOSURE button (FD-44 board S211) and adjust to the brightness mode.
6) Check that the value of the AF microcomputer data reader jig is C8±02.
7) Make all black (cover the lens with a black cap).
8) Check that the value of the AF microcomputer data reader jig is not changed from C8±02.
9) Realease the brightness mode and set again to the brightness mode.
   (「F1.4」 and 「+18dB」 should be displayed on the monitor TV.)
10) Check that the value of the AF microcomputer data reader jig is from 01 to 07.
11) Select the adjustment address EB and set the adjustment data 0B with the adjustment remote control.
12) Adjust to 「+15dB」 with CONTROL switch (FD-44 board S210).
13) Take a picture of the color bar chart standard picture frame and cover with the ND filter 2.6 (1.0+1.0+0.3+0.3).
14) Check that the width between the center of the pedestal level and the center of the white level is 105±20mV with the oscilloscope.

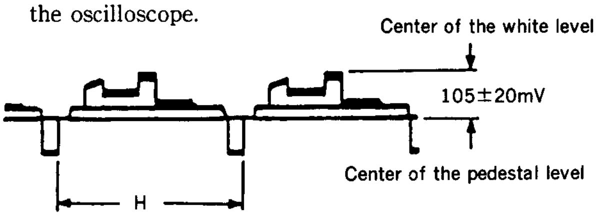


Fig. 3-32.

15) Remove the ND fiter 2.6.
16) Release the brightness mode, and after two seconds, set again to brightness mode. (「0db」 should be displayed on the monitor TV.)
17) Select the adjustment address EB and set the adjustment data 00 with the adjustment remote control.
18) Change the adjustment address in order to store the adjustment data.

Note : Although the ND filter is combined by using 4 pcs, if your ND filter is combined by using 3 pcs or less, resulting in 2.6, this combination should be available.

3-3-29. Auto White Balance Adjustment

Note 1 : Be sure to make "preset adjustment" and "auto white balance adjustment" in that order.

(1) Preset Adjustment (VC-86 Board)

Object	White pattern standard picture frame
Adjustment page	F
Adjustment address	EE (AWB MODE 1)

Note 1 : Make preset adjustment 30 seconds or more after turning on the power.

Note 2 : When redoing preset adjustment, turn off the power once, and then, turn it on again.

[Adjustment Method]

1) Turn off/on the power.
2) Obtain a picture of white pattern for over five seconds. (AF switch is turned off.)
3) Select the adjustment page 5 and the adjustment address 00, data 01 with the adjustment remote control.
4) Select the adjustment page F with the adjustment remote control.
5) Select the adjustment address EE by the adjustment remote control and set the adjustment data to be 01.
6) Change the adjustment address in order to store the adjustment data. (3200K data fetch 1)
7) Select the adjustment address EE by the adjustment remote control and set the adjustment data to be 23.
8) Change the adjustment address in order to store the adjustment data. (3200K data fetch 2)
9) Check that the LANC data is changed and the adjustment address 95 is selected.
10) Select the adjustment address EE by the adjustment remote control and set the adjustment data to be 00.
11) Change the adjustment address in order to store the adjustment data.
12) Make auto white balance adjustment.

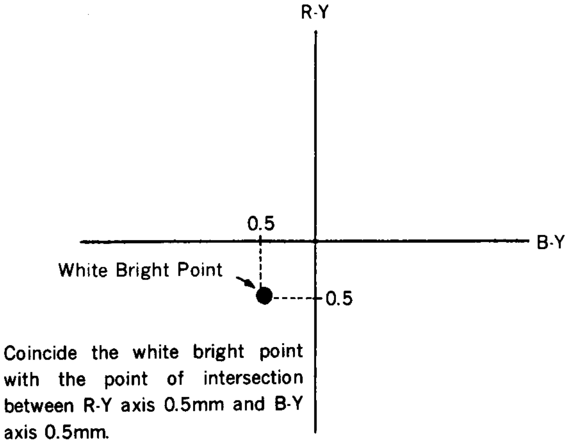
(2) Auto White Balance Adjustment

Note 1 : Be sure to make this adjustment after preset adjustment.

Object	All white pattern
Filter	Color temperature compensation filter C14
Measuring instrument	Vectorscope
Measurement point	VIDEO OUT terminal
Adjustment page	F
Adjustment address	01 (R CONT) 02 (B CONT)
Specified value	The white point must coincide.

[Adjustment Method]

1) Select the adjustment page F with the adjustment remote control.
2) Select the adjustment address EE and set the adjustment data D0 with the adjustment remote control.
3) Cover the lens with the C14 filter.
4) Change the adjustment address 01 and 02 with the adjustment remote control to coincide the white bright point with the point of intersection between R-Y axis 0.5mm and B-Y axis 0.5mm.
5) Select the adjustment address EE and enter the adjustment data 00.
6) Change the adjustment address in order to store the adjustment data.



Coincide the white bright point with the point of intersection between R-Y axis 0.5mm and B-Y axis 0.5mm.

Fig. 3-33.

3-3-30. Shutter IN/OUT Adjustment (VC-86 board)

Object	White pattern standard picture frame All black (Cover the lens with a black cap.)
Filter	ND filter 0.5 (0.4+0.1) and 0.8 (0.4+0.4)
Measurement point	CN655
Measuring instrument	AF microcomputer data reader jig
Adjustment page	F
Adjustment address	96 (SHUTTER IN) 97 (SHUTTER OUT)
Specified value	71±10 FF

[Adjustment Method]

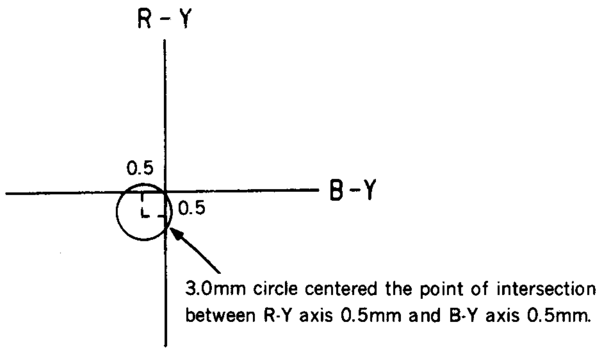
1) Select the adjustment page 5 and set the adjustment address 00, data 01 with the adjustment remote control.
2) Select the adjustment page F and set the adjustment address EB, data 11 with the adjustment remote control.
3) Turn off the AUTO LOCK switch (FD-44 board S217).
4) Push the EXPOSURE button (FD-44 board S211) and adjust to 「F1.4」 with the CONTROL switch (FD-44 board S210).
5) Attach the ND filter 0.5 (0.4+0.1) to the front of the lens.
6) After two seconds, store the data of the AF microcomputer data reader jig to the adjustment address 97. Check that this data is 71±10. (Set this data as D_{97}.)
7) Set $(D_{97}+0A)$ to the adjustment address 96.
8) Attach the ND filter 0.8 (0.4+0.4) to the front of the lens.
9) Make all black. (Cover the lens with a black cap)
10) After two seconds, check that the data of the AF microcomputer data reader jig is FF.
11) Select the adjustment address EB and set the adjustment data 00 with the adjustment remote control.
12) Change the adjustment address in order to store the adjustment data.

3-3-31. Outdoor White Balance Check

Object	White pattern standard picture frame
Filter	Color temperature compensation filter C14
Measurement point	VIDEO OUT terminal of the video block
Measuring instrument	Vectorscope
Specified value	Refer to Fig 3-35.

[Check Method]

1) Press the WHT BAL button (FD-44 board S209) to select the outdoor white balance mode. (A mark "☼" appears on the EVF screen or monitor screen (when the data screen is turned on)).
2) Check that the center of the white bright point is within the circumference shown in Fig. 3-34.



3.0mm circle centered the point of intersection between R-Y axis 0.5mm and B-Y axis 0.5mm.

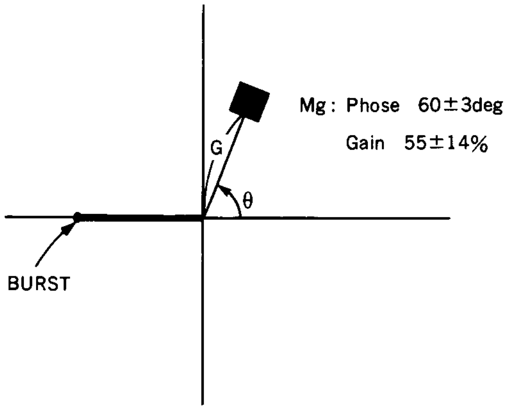
Fig. 3-34.

3-3-32. Chroma Phase/Gain Adjustment (FD-44 Board)

Mode	CAMERA Standby
Object	All Black (Cover the lens with a black cap.)
Measurement point	VIDEO OUT terminal
Measuring instrument	Vectorscope
Adjustment element	RV301
Specified value	Adjust Mg (Magenta) to the specified range. (Check that other colors are also in the specified range.)

[Adjustment Method]

1) Cover the lens of the camera with a black cap.
2) Press the TITLE 1. button (FD-44 board S202).
3) Select Mg (Magenta) pressing the COLOR/MODE button (FD-44 board S205).
4) Display the title on the whole screen pressing the MEMORY button (FD-44 board S204).
5) The specified range should be satisfied with RV301 at this time.
6) Check that the specified range of the other colors are also satisfied.



Mg: Phose 60±3deg
Gain 55±14%

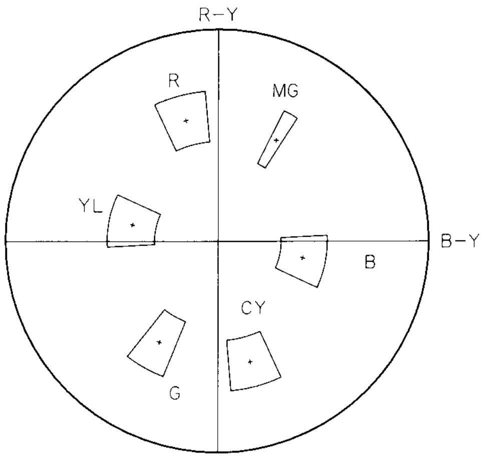


Fig. 3-35.

SECTION 4
ELECTRICAL ADJUSTMENT

See the adjusting part location diagram from on page 80 for the adjustment

4-1. PREPARATION FOR ADJUSTMENT

4-1-1. Equipment Required

The following measuring instruments are used for adjustment of the VTR block.

1) Monitor TV
2) Dual-trace oscilloscope, band width of 10MHz or more, with delay mode (use a probe 10 : 1, unless otherwise specified)
3) Frequency counter
4) Pattern generator (with video output terminal ; refer to 4-1-3 "Equipment Connection")
5) Digital voltmeter
6) Audio generator
7) Auido level meter
8) Audio distortion meter
9) Audio attenuator
10) Stabilized power supply
11) Alignment tape
    - For tracking adjustment
      (WR5-1CP) Part No. : 8-967-995-07
    - For video frequency characteristic adjustment
      (WR5-7CE) Part No. : 8-967-995-18
    - For L mode operation check
      - For SP (WR5-5CSP) Part No. : 8-967-995-46
        (WR5-4CSP) Part No. : 8-967-995-47
      - For LP (WR5-4CL) Part No. : 8-967-995-56
    - For E mode operation check (ME tape)
      - For SP (WR5-8CSE) Part No. : 8-967-995-48
      - For LP (WR5-8CLE) Part No. : 8-967-995-57
    - For Checking of AFM stereo operation
      (WR5-9CS) Part No. : 8-967-995-28

4-1-2. Precaution for Adjustment

Except "battery down adjustment" of system control system adjustment, "Switching position adjustment" of servo system adjustment the video block can be also adjusted with the camera block removed. When removing the camera block, disconnect the following 5 connectors.

1.	DC-DC converter	2 pin connector (connect the FU-97 board CN101)
2.	VC-86 board	CN305
3.	VC-86 board	CN307
4.	SW-168 board	CN701
5.	SW-168 board	CN702

Set the following menu as follows :
(Mode set)

- Hi8 ···················· AUTO
- REMOTE ················ ON
- EDIT ····················· OFF
- BILINGUAL ········· OFF

4-1-3. Equipment Connection

Connect the measuring instruments as shown in Fig. 4-1 (a) in accordance with indication of an input terminal (S VIDEO or VIDEO), and shift the CAMERA/PLAYER switch (FK-47 board S509) to PLAYER to make adjustment. The input terminal is specified in parentheses at the signal blank. When not specified, either input terminal may be used. The S VIDEO IN terminal has priority. When making adjustment with VIDEO IN terminal input, pull out a connector from the S VIDEO IN terminal.

Note 1 : When VIDEO input is used for adjustment where S VIDEO input is specified, the specifications of this equipment may not be satisfied. Be sure to follow instructions.

Note 2 : When adjustment is made using the VTR with S VIDEO output terminal as a signal source, the performance of this equipment is affected by that VTR. Use the pattern generator with Y/C separator output terminal as much as possible.

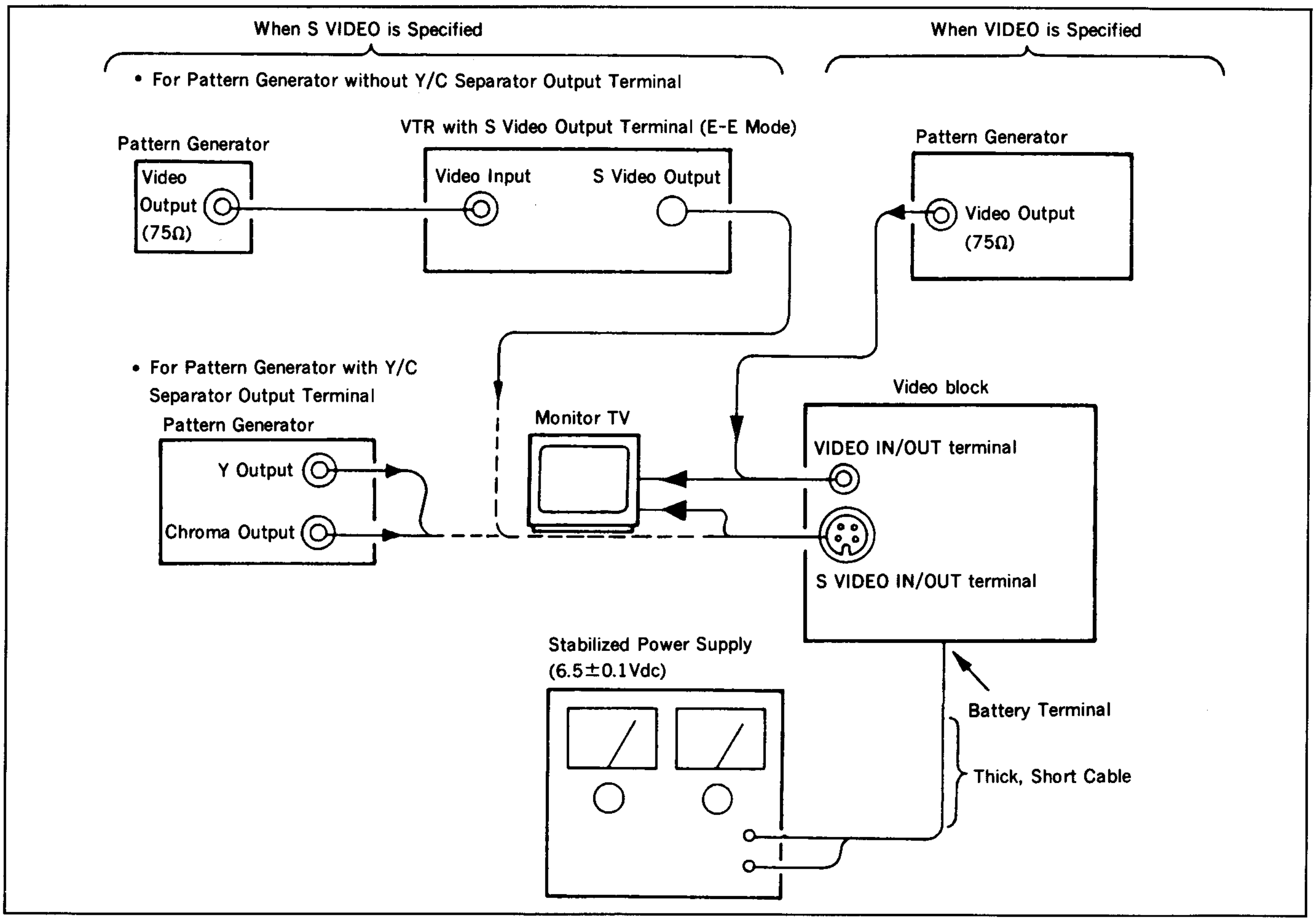

When S VIDEO is Specified
• For Pattern Generator without Y/C Separator Output Terminal
Pattern Generator
Video Output (75Ω)
VTR with S Video Output Terminal (E-E Mode)
Video Input
S Video Output
When VIDEO is Specified
Pattern Generator
Video Output (75Ω)
• For Pattern Generator with Y/C Separator Output Terminal
Pattern Generator
Y Output
Chroma Output
Monitor TV
Video block
VIDEO IN/OUT terminal
S VIDEO IN/OUT terminal
Stabilized Power Supply (6.5±0.1Vdc)
Battery Terminal
Thick, Short Cable

Fig. 4-1 (a)

Note 3 : When inputting in the "CAMERA" mode, set the CAMERA/PLAYER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar in the procedure as shown in Fig. 4-1 (b).

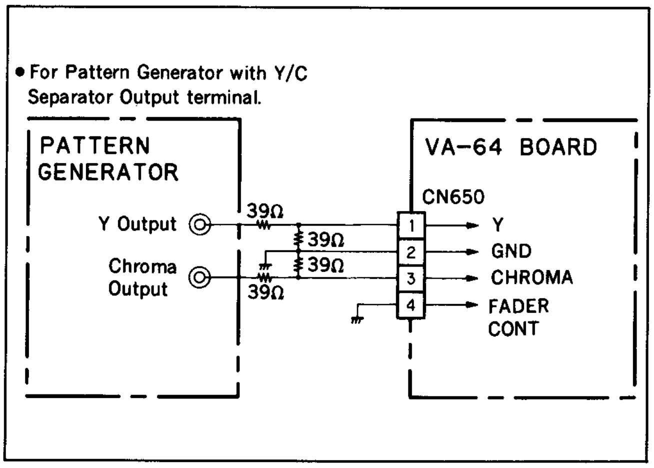

• For Pattern Generator with Y/C Separator Output terminal.
PATTERN GENERATOR
Y Output
Chroma Output
39Ω
39Ω
39Ω
39Ω
VA-64 BOARD
CN650
1
2
3
4
Y
GND
CHROMA
FADER CONT

Fig. 4-1 (b)

4-1-4. Input Signal Check

Video signals from the pattern generator are used as adjustment signals for adjustment of the VTR block. These video output signals should be within the required standard.

1) For S VIDEO input

Connect an oscilloscope to the Y signal terminal of the S VIDEO IN terminal (VA-64 board J650) and check that a Y signal sync. signal has an amplitude of about 0.3 Vp-p, and an image amplitude is about 0.7 Vp-p. (When the VTR with S VIDEO OUT terminal is used, check also that neither chroma signal nor burst signal is remaining.) Also, connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal and check that the burst signal for the chroma signal has a flat amplitude of about 0.3 Vp-p, and that a burst signal vs. chroma signal amplitude ratio is 0.30 : 0.66. Fig. 4-2 shows the Y and chroma signals used for adjustment.

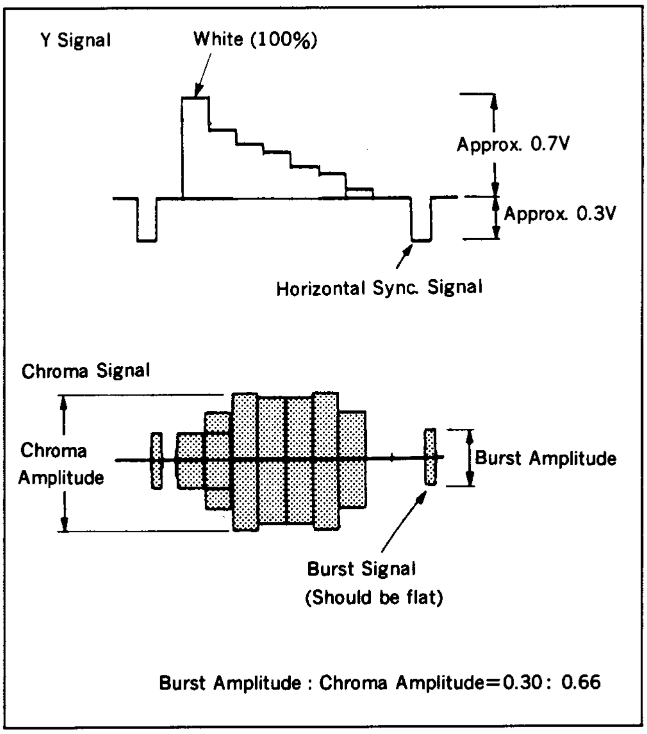

Y Signal
White (100%)
Approx. 0.7V
Approx. 0.3V
Horizontal Sync. Signal
Chroma Signal
Chroma Amplitude
Burst Amplitude
Burst Signal (Should be flat)
Burst Amplitude : Chroma Amplitude=0.30: 0.66

Fig. 4-2. Pattern Generator Color Bar Signals

2) For VIDEO input

Connect the oscilloscope to the VIDEO IN terminal (VA-64 board J651) and check that a video signal sync. signal amplitude is approx. 0.3V, image amplitude approx. 0.7V, and burst signal amplitude approx. 0.3V and flat, respectively, and that a burst signal vs. "red" signal level ratio is 0.30 : 0.66.

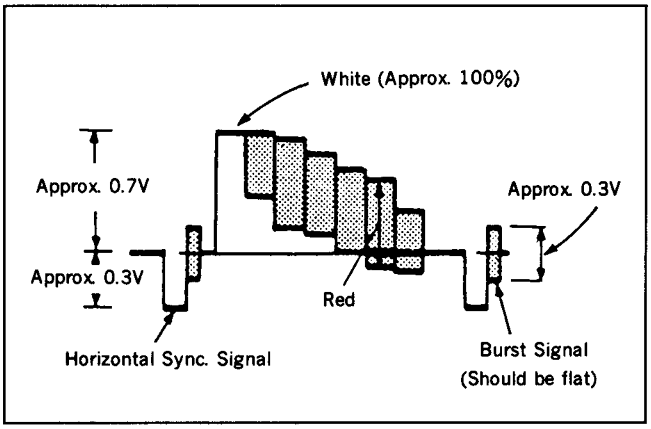

White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal Sync. Signal
Burst Signal (Should be flat)

Fig. 4-3. Pattern Generator Color Bar Signal

[Alignment Tape]

The following alignment tapes are provided. Use the alignment tape specified in the signal blank for each adjustment. When using the operation checking tape for adjustment and no type is specified, you can use any operation checking tape.

Tape	Recording Mode	Tape Type	Tape Speed	Recording content		Use
				Video Area	PCM Area (Audio)	
Tracking WR5-1CP	L	MP	SP	CH2 : 1 MHz tape path adjustment signal, Switching position adjustment marker (CH1 : 9MHz)		Tape path adjustment, Switching position adjustment
Video frequency characteristic WR5-7CE	E	ME	LP	RF sweep 0~15MHz Marker 2, 4.5, 7, 8.5, 10MHz		Frequency characteristic adjustment
Operation checking WR5-4CSP or WR5-5CSP	L	MP	SP	● Video signal Color bar : 4min. Monoscope : 4min. ● Audio signal (AFM) 400Hz, 60%modulation	Monoscope portion 20Hz, 20sec. 400Hz, 20sec. 14kHz, 20sec. Repeat 4 times Color bar portion 1kHz, 4min.	Operation checking
WR5-8CSE	E	ME	SP		400Hz, 8min	
WR5-4CL	L	MP	LP	● Video signal Color bar : 4 min. Monoscope : 4 min. ● Audio signal (AFM) 400Hz 60% modulation		
WR5-3CL	L	MP	LP	● Video signal Color bar : 4min. Monoscope : 4min. ● Audio signal (AFM) 400Hz, 60%modulation		
WR5-8CLE	E	ME	LP		400Hz, 8min	
AFM stereo checking operation WR5-9CS	L	MP	SP	● Video signal Color bar : 4 min. 400Hz 8min. ● Audio signal (AFM) ● Color bar part Lch : 400Hz L+R (1.5MHz±60kHz) Rch : 1kHz L−R (1.7MHz±30kHz) ● Monoscope part DEV+Bilingual (Including a RF ID signal.)	● Audio signal (PCM) 400Hz 8min.	AFM stereo PB matrix adjustment

Note : Recording modes

L .... Conventional mode

E .... hi8 (high band) mode

Tape types

MP .... Coated metal tape

ME .... Evaporated metal tape

The color bar signal recorded in the alignment tape is shown in the Fig.4-3.

Note: Measure with the VIDEO INPUT-OUTPUT terminal (75Ω terminal) playback mode.

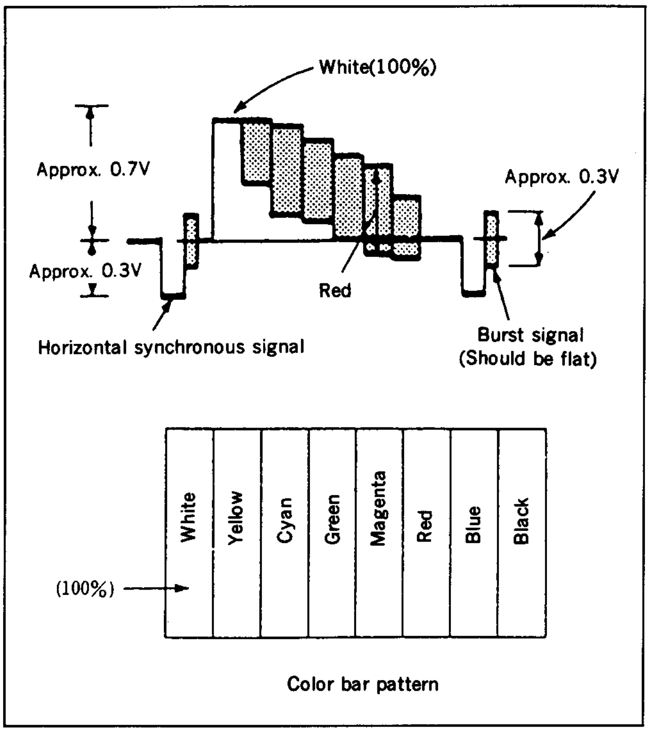

White(100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal synchronous signal
Burst signal
(Should be flat)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black
(100%)
Color bar pattern

Fig.4-4. Color bar signal of the alignment tape

[I/O Level and Impedance]

Video output phono jack
Output signal: 1 Vp-p, 75Ω unbalance, sync. negative
S video output (4-pin mini-DIN)
Luminance signal: 1 Vp-p, 75Ω unbalance, sync. negative
chroma signal: 0.3 Vp-p, 75Ω unbalance
Audio output phono jack
Specified output: −7.5dBs (at 47kΩ load)
Output impedance: 2.2kΩ or less

4-1-5. Recording Mode (E Mode/L Mode) Changeover

The recording mode of this equipment is changed over as shown in the table below. The playback mode (E mode/L mode) is automatically changed over depending on the recording mode for the tape to be played back.

Menu Mode set [Hi8] (L Model/E Model Selector Menu)	CAMERA/PLAYER Power Switch (FK-47 Board S509)	Tape Used	Recording Mode
AUTO (E mode)	CAMERA	ME	E
		MPHG	
		MP	L
	VTR	ME	E
		MPHG	
		MP	L
OFF (L mode)	Irrelevant	ME	L
		MPHG	
		MP	

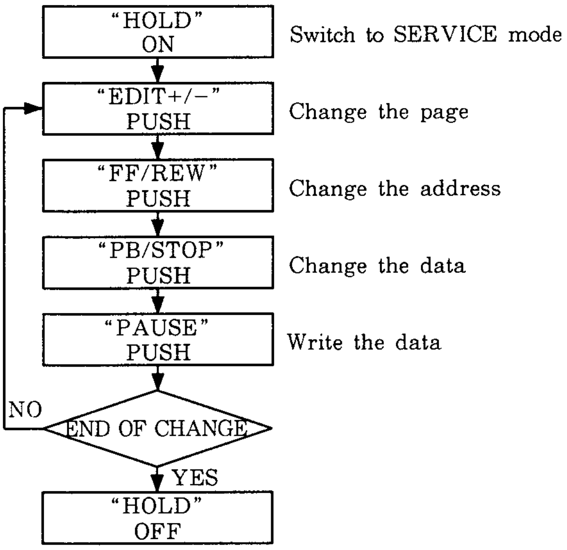
4-1-6. To Set the AEP, UK Model to REC Mode

1. Make the set CAMERA section connected.
2. Enter SERVICE mode with the adjustment remote control. (Refer to page 4 for details.)
3. Set the data at address: 00 on page: 1 to 01 * 1.
4. Set the data at address: 02 on page: D to 03 *1.
5. Turn the power of the set off.
6. Turn the power of the set on.
7. Make shorting once for S508 land of FK-47 board.

After voltage measurement and adjustment, restore as follows:

1. Set the data at address: 00 on page: 1 to 01 *1.
2. Set the data at address: 02 on page: D to 02 *1.
3. Turn the power of the set off.

*1 [To change the data]


"HOLD" ON
Switch to SERVICE mode
"EDIT+/−" PUSH
Change the page
"FF/REW" PUSH
Change the address
"PB/STOP" PUSH
Change the data
"PAUSE" PUSH
Write the data
NO
END OF CHANGE
YES
"HOLD" OFF

4-2. POWER SUPPLY CHECK

4-2-1. Supply Voltage Check (FU-97 Board)

Mode	E-E
Measuring instrument	Digital voltmeter
SS 5V check	
Measurement point	CN102 pin ⑫
Specified value	4.9±0.15Vdc
VI 5V check	
Measurement point	CN102 pin ⑳
Specified value	4.9±0.15Vdc
AUDIO 5V check	
Measurement point	CN102 pin ⑭
Specified value	4.9±0.15Vdc
EVF 5V check	
Measurement point	CN102 pin ⑬
Specified value	4.9±0.15Vdc

[Check Method]

1) Each supply voltage must meet its specified value.

4-3. SYSTEM CONTROL SYSTEM ADJUSTMENT

4-3-1. Battery Down Adjustment

Mode	CAMERA REC
Signal	Unnecessary
Measurement point	Display on the adjustment remote control
Measuring instrument	Adjustment remote control
Adjustment Page	D
Adjustment address	06
Specified value	d: 7d:06 (reference value) Note : Actually, exact data of 5.5V_{DC} of page D address 06 is written.

[Connection]

1) Make the set MIC board, EVF board, and CAMERA section connected.
2) Connect the adjustment remote control to the REMOTE terminal.
3) Connect the digital voltmeter so to measure the voltage of the stabilized power supply unit connected to the battery terminal.

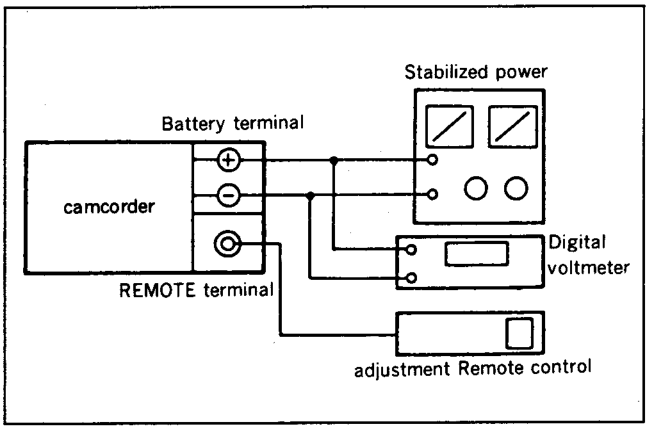


Fig. 4-5.

[Adjustment Method]

1) Turn on the POWER switch. (CAMERA mode)
2) Adjust the output of the stabilized power supply unit to be 5.58±0.01 V_{DC} (battery terminal voltage).
3) Turn on the CAMERA REC mode.
4) Set the HOLD switch of the remote control for adjustment to the HOLD side.
5) Press once the EDIT SEARCH (+) button of the adjustment commander select page 1, select data 01 of address 00, and release the protector.
6) Press four times the EDIT SEARCH (−)button of the remote control for adjusment. (Set the adjustment page to D.)
7) Read adjustment data at adjustment address 06 on adjustment page D with the SENSER LANC.

d: 7d:06 (reference value)

8) Store the adjustment data read in step 7) to adjustment address 07.
9) Turn off the POWER switch.

[Checking Method]

1) Turn on the power.
2) Adjust the output of the stabilized power source to be 5.66±0.01V_{DC}.
3) Set the camera REC mode.
4) After five seconds,TALLY should flash at 0.8Hz. (Battery Pre End)
5) Adjust the output of the stabilized power source to be 5.58±0.01V_{DC}.
6) Set the camera REC mode.
7) After five seconds, STOP mode should be set and TALLY should flash a 3.2Hz. (Battery END)

4-3-2. Clock Accuracy Adjustment (FD-44 Board)

Mode	E-E
Signal	Unnecessary
Measurement point	IC201 pin (69)
Measuring instrument	Ocsilloscope Frequency counter
Adjustment element	CT201
Specified value	512.003±0.001Hz

Note : Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 512.003±0.001Hz with CT201.

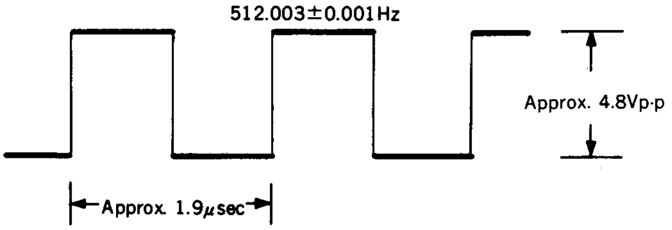


Fig. 4-6.

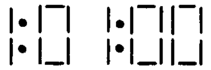
4-4. SERVO SYSTEM ADJUSTMENT

4-4-1. Switching Position Adjustment (SS-134 Board)

Mode	Playback
Signal	Alignment tape : Operation check (WR5-1CP)
Measurement point	CH1 : CN200 pin ④ (RF SWP) CH2 : CN200 pin ③ (RF OUT)
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	05 04
Specified value	$t_1 = 0 \pm 5\mu sec$ $t_2 = 0 \pm 5\mu sec$

[Adjustment Method]

1) Set the HOLD switch of the remote control for adjustment to the HOLD side. (ADJUST MODE is set.)
2) Select page 1 with the remote control for adjustment and select adjustment data 01 of adjustment address 00. (Protector is released.)



3) Press four times the EDIT SEARCH (—) button of the remote control for adjustment. (Adjustment page D is set.)
4) Select the adjustment address to 05 (for coarse adjustment) in order to change the adjustment data, and adjust to minimize "t_1".
5) Press the PAUSE button in order to store the adjustment data.
6) Select the adjustment address 04 (for fine adjustment) in order to change the adjustment data and adjust to $t_1 = 0 \pm 5\mu sec$.
7) Press the PAUSE button in order to store the adjustment data.

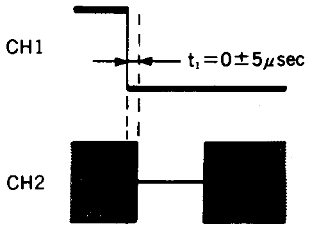


Fig. 4-7.

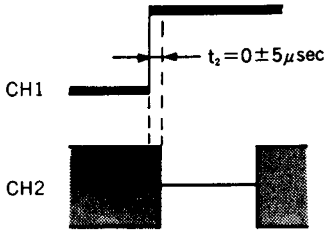


Fig. 4-8.

8) Confirm to $t_2 = 0 \pm 5\mu sec$.
   If necessary, repeat steps 6) to 8).

Note : t_1 moves approximately $1\mu sec$ per step of data at adjustment address 04. t_1 moves approximately $16\mu sec$ per step of data at adjustment address 05.

4-4-2. Oscillation Frequency Adjustment (FU-97 Board)

Mode	Record
Signal	Unnecessary
Measurement point	Q102 collector
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	RV102
Specified value	400±2kHz

Note : Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 400±2kHz with RV102.

4-4-3. Output Voltage Adjustment (FU-97 Board)

Mode	Record
Signal	Unnecessary
Measurement point	(+) side : CN102 pin ⑳ (VI 5V) (−) side : CN102 pin ⑲ (VI GND)
Measuring instrument	Digital voltmeter
Adjustment element	RV101
Specified value	$4.90 \pm 0.02V_{DC}$

[Adjustment Method]

1) Adjust to $4.90 \pm 0.02V_{DC}$ with RV101.

4-5. VIDEO ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure below. The color video input signal supplied from the pattern generator is used as the video input signal for video adjustment in the REC mode. Make sure that the SYNC signal and color burst signal are matched with the standard specified for set-up as shown in the Fig. 4-2 during adjustment.

[Adjustment Sequence]

1) Playback Frequency Characteristic Adjustment
2) X'tal Oscillator fo Check
3) E-E Adjustment
4) IR Adjustment
5) Chroma Comb Filter Adjustment
6) Emphasis Y Level Adjustment
7) L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment
8) E Mode Y FM Carrier Frequency, Y FM Deviation Adjustment
9) Chroma Emphasis Adjustment
10) HUE Phase Deviation Adjustment
11) Recording Current Adjustment
12) Y Level Adjustment
13) C Out Level Adjustment
14) PB CCD Input Level Adjustment
15) E Mode PB Y Level Adjustment
16) YD Adjustment

4-5-1. Playback Frequency Characteristic Adjustment (SS-134 Board)

(1) CH1, CH2 Adjustment

Description in [ ] is for CH2 adjustment.

Mode	Playback
Signal	Alignment tape for frequency characteristic adjustment (WR5-7CE)
Measurement point	CN200 pin ③ External trigger : CN200 pin ④ (RF SWP) Trigger scope : +, [−]
Measuring instrument	Oscilloscope
Adjustment element	RV202 [RV203]
Specified value	When the 4.5MHz signal level is set to 3, the 8.5 MHz signal level is 2±0.2.

[Adjustment Method]

1) Adjust RV202 [RV203] so that the 8.5MHz signal level will be 2±0.2 when the 4.5MHz signal level is set to 3.

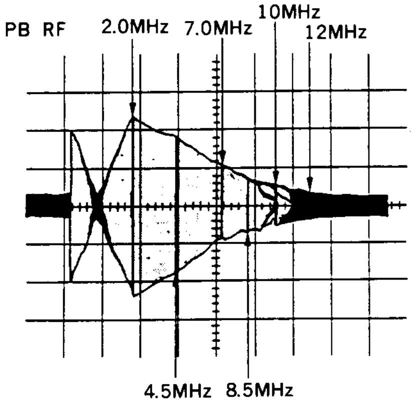


Fig. 4-9.

(2) CH1′ Adjustment

Mode	Playback (service mode)
Signal	Alignment tape for frequency characteristic adjustment (WR5-7CE)
Measurement point	CN200 pin ③ External trigger: CN200 pin ④ (RF SWP) Trigger slope: −
Measuring instrument	Oscilloscope
Adjustment element	RV201
Specified value	The 8.5MHz signal level is 2±0.2 when the 4.5 MHz signal level is set to 3.

[Adjustment Method]

1) Turn on the HOLD of the adjustment remote control.
2) Set the adjustment remote control page 1 and the adress 4D, and write down the data value. (This data is set to A.).
3) Adjust the data to 20 with the adjustment remote control.
4) Feed the address in order to store the adjustment data.
5) Turn off the HOLD of the adjustment remote control and set the playback mode.
6) Adjust with RV201 so that the 8.5MHz signal level in 2±0.2 when the 4.5MHz signal is set to 3.
7) After the adjustment, set the page 1 and the address 40, and set the data A.
8) Feed the address in order to store the adjustment data.

4-5-2. X'tal Oscillator fo Check (VA-64 Board)

Made	E-E
Signal	Color bar
Measurement point	IC651 pin ⑫
Measuring instrument	Oscilloscope Frequency counter
Specified value	4433619±50Hz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Check Method]

1) Make sure that the oscillation frequency of IC651 pin ⑫ is 4433619±50Hz.

4433619±50Hz

Fig. 4-10.

4-5-3. E-E Level Adjustment (VA-64 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	J651 (VIDEO OUT terminal)
Measuring instrument	Oscilloscope
Adjustment element	RV652
Specified value	1.020±0.025Vp-p

Note1: Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

Note2: J651 (VIDEO OUT terminal) mast be terminated at 75Ω.

[Adjustment Method]

1) Adjust to 1.020±0.025Vp-p with RV652.

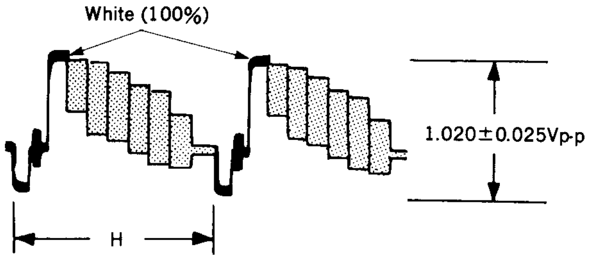


Fig. 4-11.

4-5-4. IR Adjustment (VA-64 Board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement point	IC650 pin ⑦
Measuring instrument	Oscilloscope
Adjustment element	RV650
Specified value	Minimum red residual chroma component (50mVp-p or less)

[Preparation]

1) Short the IC650 pin ⑭ and pin (51).

[Adjustment Method]

1) Minimize the red residual chroma component with RV650.(50mVp-p or less)

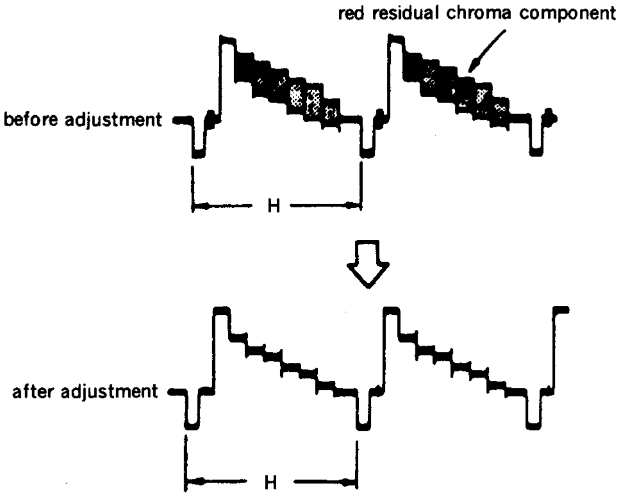

red residual chroma component
before adjustment
H
after adjustment
H

Fig. 4-12.

4-5-5. Chroma Comb Filter Adjustment (VA-64 Board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement point	IC650 pin ⑪
Measuring instrument	Oscilloscope
Adjustment element	RV651 (COMB) RV664 (SEP)
Specified value	Minimum red residual chroma component (12mVp-p or less)

[Adjustment Method]

1) Adjust RV651 and RV664 alternately and minimize the red residual chroma component. (12mVp-p or less)

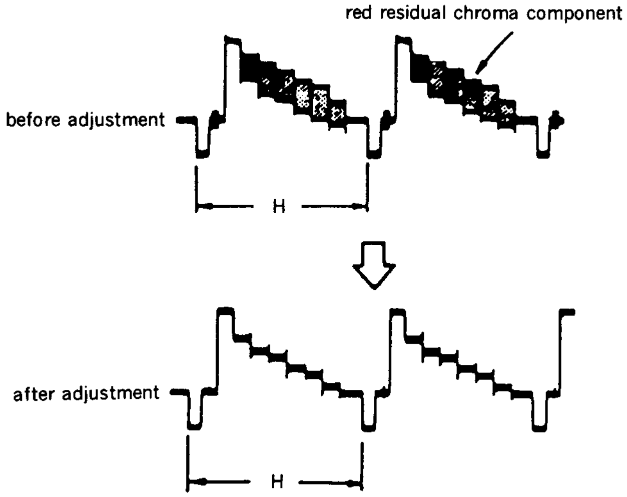

red residual chroma component
before adjustment
H
after adjustment
H

Fig. 4-13.

4-5-6. Emphasis Y Level Adjustment (VA-64 Board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement point	IC650 pin ③
Measuring instrument	Oscilloscope
Adjustment element	RV662
Specified value	500±20mVp-p

Note: Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Adjustment Method]

1) Adjust to 500±20mVp-p with RV662.

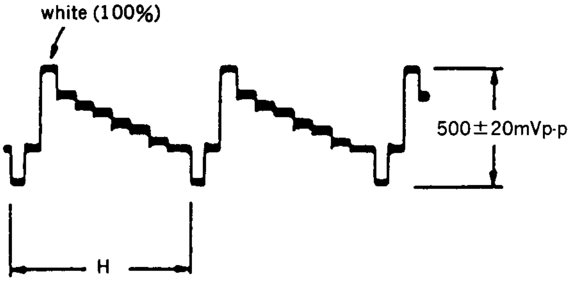


Fig. 4-14.

4-5-7. L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Note: After completing this adjustment, be sure to make E mode Y FM carrier frequency, Y FM deviation adjustment as described in 4-5-8.

(1) L Mode Y FM Carrier Frequency Adjustment (VA-64 Board)

Mode	E-E
Signal	No signal
Measurement point	IC650 pin ㊸ (Y RF OUT)
Measuring instrument	Frequency counter Oscillcscope
Adjustment element	RV653
Specified value	4.38±0.05MHz

Note1: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Note2: Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Adjustment Method]

1) Set an MP type cassette tape.
2) Adjust to 4.38±0.05MHz with RV653.
3) Make L mode Y FM deviation adjustment described in (2) below.

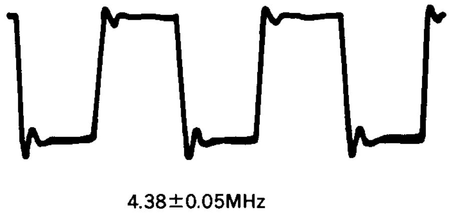


Fig. 4-15.

(2) L Mode Y FM Deviation Adjustment (VA-64 Board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV654
Specified value	Playback level of 1.020±0.025Vp-p

Note 1 : Y level out adjustment and L mode Y FM carrier frequency adjustment must have been completed.

Note2 : Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Adjustment Method]

1) Set an MP type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback output level.
   Specified value : 1.020±0.025Vp-p.
5) When the specified value is not met, turn RV654 as follows and repeat the steps 1) through 4) above.

	RV654 Rotating Direction
When larger than specified value	Counterclockwise direction (↺)
When smaller than specified value	Clockwise direction (↻)

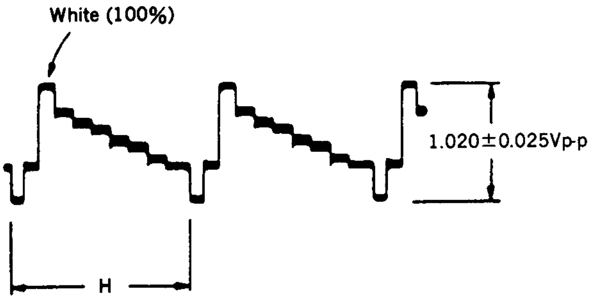


Fig. 4-16.

4-5-8. E Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Note : Make this adjustment after completing "4-5-7 L Mode Y FM Carrier Frequency, Y FM Deviation Adjustment".

(1) E Mode Y FM Carrier Frequency Adjustment (VA-64 Board)

Mode	E-E
Signal	No signal
Measurement point	IC650 pin ㊸ (Y RF OUT)
Measuring instrument	Frequency counter Osclloscope
Adjustment element	RV656
Specified value	5.99±0.05MHz

Note1 : Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Note2 : Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Adjustment method]

1) Set an ME type cassette tape.
2) Adjust to 5.99±0.05MHz with RV656.
3) Make E mode Y FM deviation adjustment as described in (2) below.

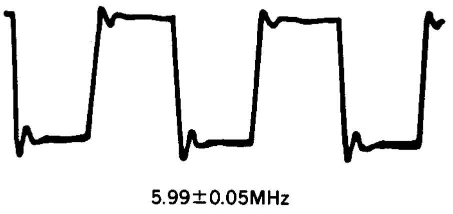


Fig. 4-17.

(2) E Mode Y FM Deviation Adjustment (VA-64 Board)

Mode	Recording and playback
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV657
Specified value	Playback level of 1.020±0.025Vp-p

Note 1 : Y out level adjustment and E mode Y FM carrier frequency adjustment must have been completed.

Note2 : Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Adjustment Method]

1) Set an ME type cassette tape.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback output level.
   Specified value : 1.020±0.025Vp-p
5) When the specified value is not met, turn RV657 as follows and repeat the steps 1) through 4) above.

	RV657 Rotating Direction
When larger than specified value	Counterclockwise direction (↺)
When smaller than specified value	Clockwise direction (↻)

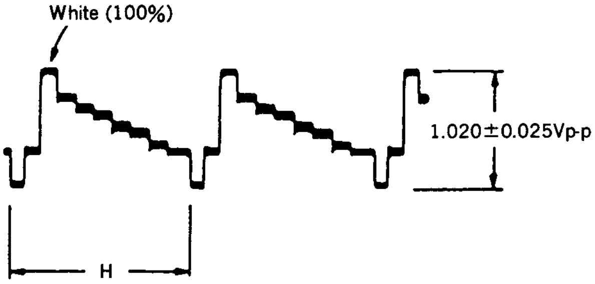


Fig. 4-18.

4-5-9. Chroma Emphasis Adjustment (VA-64 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC651 pin ㉔
Measuring instrument	Oscilloscope
Adjustment element	FL650
Specified value	Minimum red level (170mVp-p or less)

Note : Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Adjustment Method]

1) Minimize the red level with FL650 (170mVp-p or less)

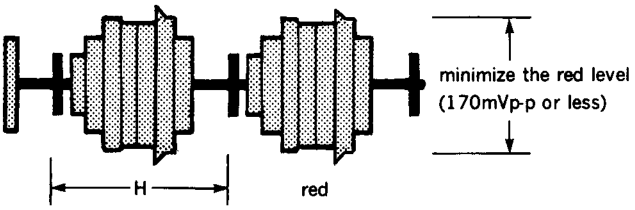


Fig. 4-19.

4-5-10. HUE Phase Deviation Adjustment (VA-64 Board) (Use a Vectorscope)

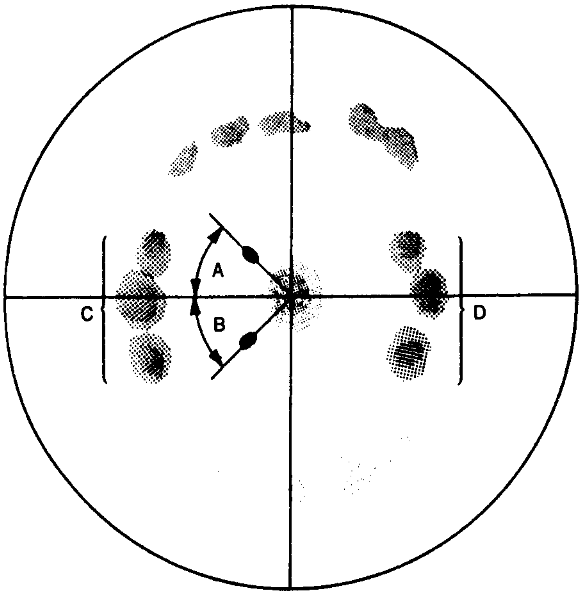
Mode	Playback + Pause
Signal	Alignment tape for operation check (WR5-5CSP), Color bar portion
Measurement point	J650 (VIDEO OUT)
Measurement instrument	Vectorscope
Adjustment element	RV686 (FSC) RV658 (APC LPF)
Specified value	See Fig. 4-20.

[Connection]

1) Input 4.43MHz signal from Pin⑫ of IC651 to 1CH of an oscilloscope.
2) Connect 1CH output of an oscilloscope to the EXT. subcarrier reference input of a vectorscope.
3) Put on the EXT. subcarrier switch of a vectorscope.

[Adjustment Method]

1) Adjust with RV686 so as to equalize A and B as shown in Fig. 4-20.
2) Adjust with RV658 so as to minimize the shaking of each three brighting point of C and D.



RV686: A=B
RV658: make C and D a contrast

Fig. 4-20.

4-5-11. Recording Current Adjustment

Make this adjustment in the E mode, using the ME tape. Before adjustment, check the following :

1) A connector must be inserted into the S VIDEO IN terminal (VA-64 board J650). (at no-signal time as well) Also, remove CN002 of the CC-60 board in order to prevent the index system from being affected.

(1) REC Y Recording Current Adjustment (SS-134 Board)

Mode	Recording
Signal	No signal
Measurement point	TP204
Measuring instrument	Oscilloscope
Adjustment element	RV207
Specified value	210±10mVp-p

Note 1 : After REC Y recording current adjustment, be sure to make REC C, REC AFM and REC ATF recording current adjustments or check.

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 210±10mVp-p with RV207.

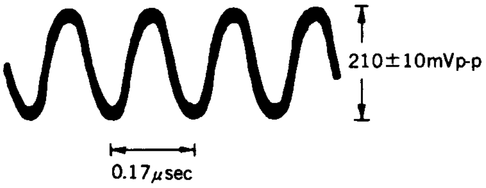


Fig. 4-21.

(2) REC C Recording Current Adjustment (SS-134 Board)

Mode	Recording
Signal	Color bar (S VIDEO)
Measurement point	TP204
Measuring instrument	Oscilloscope
Adjustment element	RV206
Specified value	35±3mVp-p

Note : Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Connection]

1) Connect the following 3 sections with jumper wires.
   1. VA-64 board W650 pin ㉙ (REC Y RF) to pin ① (VIDEO 5V)
   2. VA-64 board W650 pin ㉞ (REC AFM RF) to pin ① (VIDEO 5V)
   3. SS-134 board Q153 emitter (ATF) to IC150 pin ㉗ (SS 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 35±3mVp-p with RV206.
3) After REC C recording current adjustment, be sure to make REC AFM and REC ATF recording current adjustments.

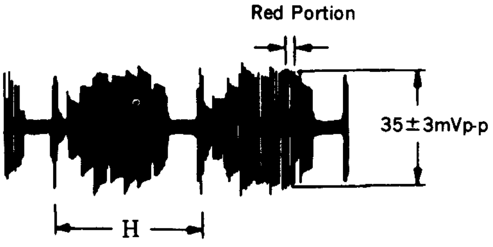


Fig. 4-22.

(3) REC AFM Recording Current Adjustment (SS-134 Board)

Mode	Recording
Signal	No signal
Measurement point	TP204
Measuring instrument	Oscilloscope
Adjustment element	RV205
Specified value	10.0±1.5mVp-p

Note 1 : When the TP204 signal level is too low to read, connect directly through a 100Ω resistor as shown in the figure below instead of using a probe of 10 : 1.

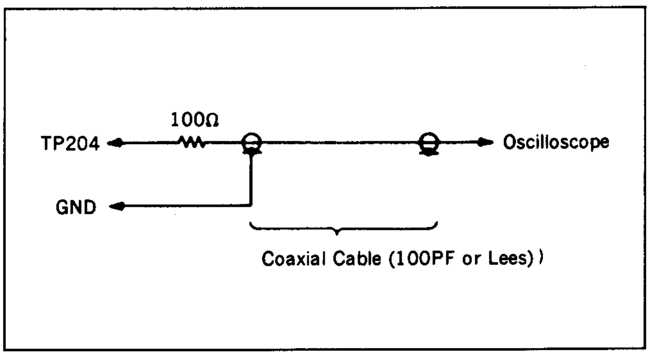


Fig. 4-23.

[Connection]

1) Connect the following 3 sections with jumper wires :
   1. VA-64 board W650 pin ㉙ (REC Y RF) to pin ① (VIDEO 5V)
   2. VA-64 board W650 pin ㉛ (REC C RF) to pin ① (VIDEO 5V)
   3. SS-134 board Q153 emitter (ATF) to IC150 pin ㉗ (SS 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Adjust to 10.0±1.5mVp-p with RV205.

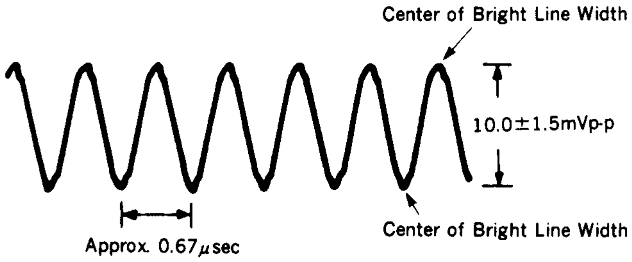


Fig. 4-24.

(4) REC ATF Recording Current Check (SS-134 Board)

Mode	Recording
Signal	No signal
Measurement point	TP204
Measuring instrument	Oscilloscope
Specified value	8.0±1.5mVp-p

Note 1 : When the TP204 signal level is too low to read, connect directly through a 100Ω resistor as shown in the figure below without using a probe of 10 : 1.

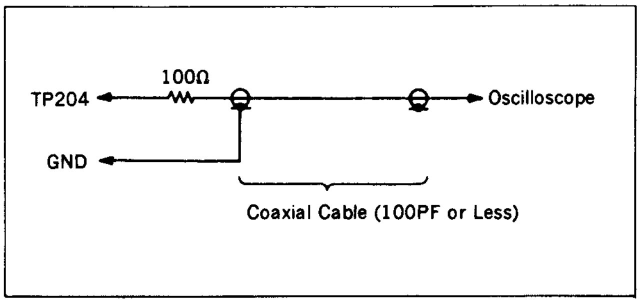


Fig. 4-25.

[Connection]

1) Connect the following 3 sections with jumper wires.
   1. VA-64 board W650 pin ㉙ (REC Y RF) to pin ① (VIDEO 5V)
   2. VA-64 board W650 pin ㉛ (REC C RF) to pin ① (VIDEO 5V)
   3. VA-64 board W650 pin ㉞ (REC AFM RF) to pin ① (VIDEO 5V)

[Adjustment Method]

1) Set an ME type cassette tape and select the recording mode.
2) Check to 8.0±1.5mVp-p.

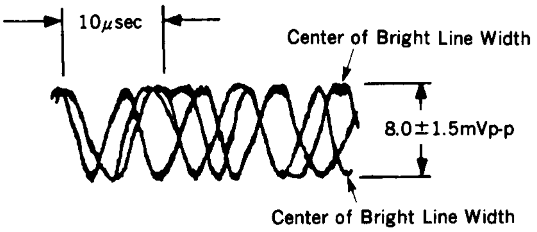


Fig. 4-26.

4-5-12. Y OUT Level Adjustment (VA-64 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV661
Specified value	1.020±0.025Vp-p

Note : Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Connection]

1) Terminate the signal terminal for J650 (S VIDEO) at 75Ω.

[Adjustment Method]

1) Adjust to 1.020±0.025Vp-p with RV661.

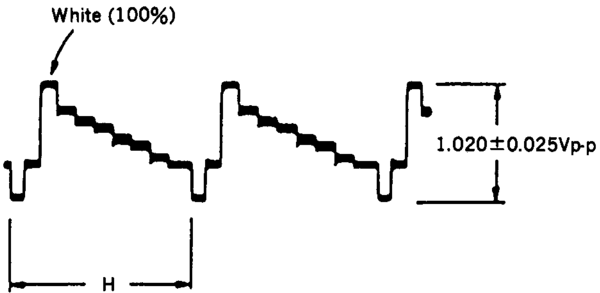


Fig. 4-27.

4-5-13. C OUT Level Adjustment (VA-64 Board)

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	J650 (S VIDEO) chroma signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV666
Specified value	0.300±0.015Vp-p

Note: Set the POWER switch (FK-47 board S509) to be in the "CAMERA" mode and input the color bar signal by the component from the VA-64 board CN650. (Refer to Fig. 4-1 (b).)

[Connection]

1) Terminate the chroma signal terminal of J650 (S VIDEO) at 75Ω.

[Adjustment Method]

1) Adjust the burst level to 0.300±0.015Vp-p with RV666.

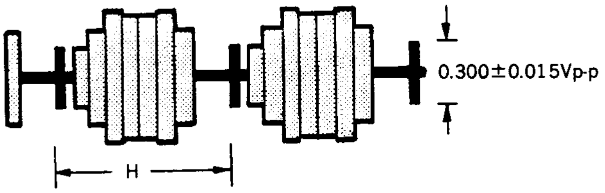


Fig. 4-28.

4-5-14. PB CCD Input Level Adjustment (VA-64 Board)

Mode	Playback
Signal	Alignment tape : Operation check (WR5-8CSE) color bar portion
Measurement point	IC650 pin ⑮
Measuring instrument	Oscilloscope
Adjustment element	RV655
Specified value	500±25mVp-p

[Adjustment Method]

1) Adjust to 500±25mVp-p with RV655.

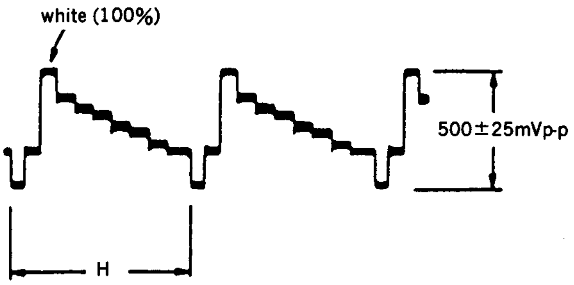


Fig. 4-29.

4-5-15. E Mode PB Y Level Adjustment (VA-64 Board)

Mode	Playback
Signal	Alignment tape for operation checking (WR5-8CSE) color bar portion
Measurement point	J650 (S VIDEO) Y signal terminal
Measuring instrument	Oscilloscope
Adjustment element	RV663
Specified value	1.020±0.025Vp-p

[Connection]

1) Terminate the signal terminal of J650 (S VIDEO) at 75Ω.

[Adjustment Method]

1) Adjust to 1.020±0.025Vp-p with RV663.

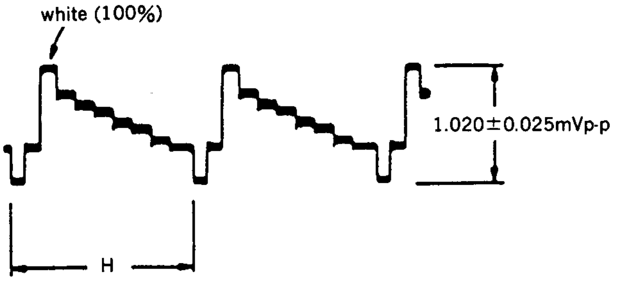


Fig. 4-30.

4-5-16. YD Adjustment (VA-64 Board)

Mode	Playback+PAUSE
Signal	Alignment tape for operation checking color bar portion
Measurement point	Monitor TV display
Measuring instrument	
Adjustment element	RV416
Specified value	Flickering is not significantly visible.

[Adjustment Method]

1) Playback the signal.
2) Adjust RV416 so that flickering is not significantly visible on the PAUSE screen.

4-6. Digital Titler System Adjustment

[Adjustment Spequence]

1) Data Screen Frequency Adjustment
2) DDS Charactor Position Adjustment
3) 4FSC Frequency Adjustment
4) Controler Frequency Adjustment
5) Tracking TH Adjustment

4-6-1. Data Screen Frequency Adjustment (SS-134 Board)

Mode	E-E
Signal	No-signal
Measurement point	IC102 pin ⑲
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	CT102
Specified value	15675±50Hz

Note : Connect the frequency counter thmough a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 15675±50Hz with CT102.

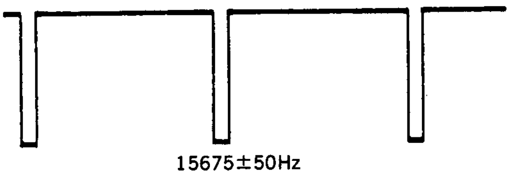


Fig. 4-31.

4-6-2. DDS Character Position Adjustment (SS-134 Board)

Mode	Playback (Data screen ON)
Signal	Color bar (used signal of TG-7)
Measurement point	Monitor TV display
Measuring instrument	Monitor TV
Adjustmen element	CT101
Specified value	The inner line to the dividing line between red and blue.

[Adjustment Method]

1) Turn on the DATA SCREEN switch (FK-47 board S512).
2) Adjust the last inner line to the dividing line between red and blue with CT101. (Refer to Fig. 4-32.)
3) Turn off the DATA SCREEN switch (FK-47 board S512).

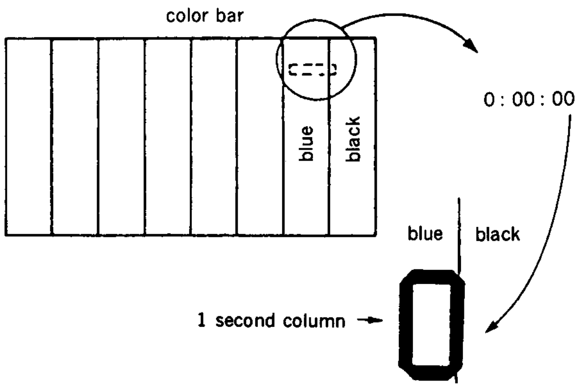


Fig. 4-32.

4-6-3. 4FSC Frequency Adjustment (FD-44 Board)

Mode	E-E
Signal	No-signal
Measurement point	Q314 Emitter
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	CT302
Specified value	4433619±50Hz

Note : Connect the frequency counter thmough a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 4433619±50Hz with CT302.

4-6-4. Controller Frequency Adjustment (FD-44 Board)

Mode	E-E
Signal	No-signal
Measurement point	IC301 pin ⑪
Measuring instrument	Oscilloscope Frequency counter
Adjustment element	CT301
Specified value	9453±50kHz

Note : Connect the frequency counter thmough a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Adjustment Method]

1) Adjust to 9453±50kHz with CT301.

4-6-5. Tracking TH Adjustment (FD-44 Board)

Mode	E-E
Signal	Staircase (8 stairs)
Measurement point	CH 1 : CN201 pin ⑰ (Staircase input) CH 2 : IC303 pin ① (A/D select output)
Measuring instrument	Oscilloscope
Adjustment element	RV302
Specified value	Staircases to the second stair should be fetched and the third one should not be fetched.

[Adjustment Method]

1) Adjust to satisfy the specified value with RV302. (Refer to Fig. 4-33.

Note : In the case that ten staircases are used. the third stair should be fetched and the fourth one should not be fetched.

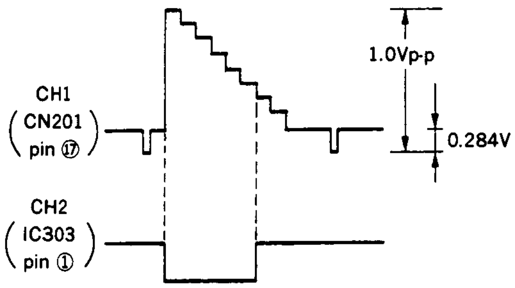


Fig. 4-33.

4-7. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

Connect the audio system measuring instrument as shown in the following figure as well as the video system measuring instrument, and perform the adjustment at the 「Video」 position of the power switch.

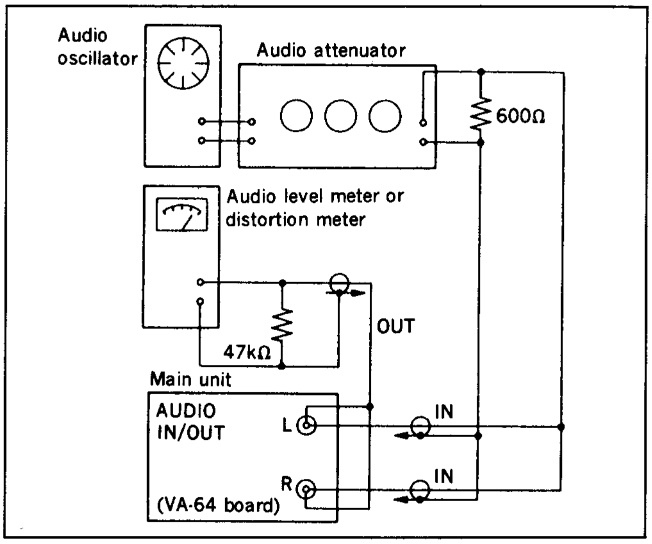


Fig. 4-34.

[Adjustment Spequence]

1) Recording Matrix Adjustment
2) AFM Carrier Frequency Check
3) IR Adjustment
4) Deviation Adjustment
5) Playback Matrix Adjustment
6) Recording AFM Carrier Level Adjustment
7) Playback Level Adjustment
8) Overall Output Level Check
9) Overall Frequency Characteristics Check
10) Overall Distortion Check
11) Overall Noise Level Check

4-7-1. Recording Matrix Adjustment (AU-99 Board)

Mode	Recording
Signal	400Hz, −7.5dBs both L and R
Measurement point	IC401 pin ③
Measuring instrument	Audio level meter
Adjustment element	RV401
Specified value	Less than 5mVp-p

[Adjustment Method]

1) Adjust to less than 5mVp-p with RV401.

4-7-2. AFM Carrier Frequency Check (AU-99 Board)

Mode	Recording
Signal	No-signal
Measurement point	L: IC403 pin ⑧ R: IC404 pin ⑧
Measuring instrument	Frequency counter
Specified value	L: 1.50±0.02MHz R: 1.70±0.02MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

[Checking Method]

1) Turn off the output of the audio oscillator.
2) Check that the AFM carrier frequency in L: 1.50±0.01MHz and R: 1.70±0.02MHz.

4-7-3. IR Adjustment (AU-99 Board)

Mode	Self-recording and playback
Signal	Record no signal by inserting shorting plugs into andio input jacks (both L and R). Playback the recorded section.
Measurement point	L: IC403 pin ㊹ — IC403 pin ⑥ R: IC404 pin ㊹ — IC404 pin ⑥
Measuring instrument	Digital voltmeter
Adjustment element	L: RV405 R: RV407
Specified value	Less than ±10mV

[Adjustment Method]

1) Adjust alternately the RV405 and the RV407 to be below ±10mV.

4-7-4. Deviation Adjustment (AU-99 Board)

Mode	Playback
Signal	Alignment tape for AFM stereo checking operation (WR5-9CS). Monoscope portion.
Measurement point	L: IC403 pin ㉔ R: IC404 pin ㉔
Measuring instrument	Level meter
Adjustment element	L: RV404 R: RV408
Specified value	−15.0±0.2dBs

[Adjustment Method]

1) Adjust alternately the RV404 and the RV408 to be −15.0±0.2dBs.

4-7-5. Playback Matrix Adjustment (AU-99 Board)

Mode	Self-recording and playback
Signal	Record 400Hz/−7.5dBs signal by connecting audio oscillator to R-channel audio input jack. Insert a shorting plug into L-channel audio input. Playback the recorded section.
Measurement point	L-channel audio output jack
Measuring instrument	Level meter
Adjustment element	RV402
Specified value	Less than −40dBs

[Adjustment Method]

1) Adjust to be below −40dBs with the RV402.

4-7-6. Recording AFM Carrier Level Adjustment (AU-99 Board)

Mode	Recording
Signal	No signal Insert a short plug into L-channel audio input jack only. Don't insert any play into R-channel.
Measurement point	W401 pin ⑭ (REC AFM RF)
Measuring instrument	Oscilloscope
Adjustment element	RV403 RV406
Specified value	80±5mV

[Adjustment Method]

1) Adjust alternately the RV403 and the RV406 to be 80±5mV.

4-7-7. Playback Level Check

Mode	Playback
Signal	Alignment tape: Operation checking (WR5-5CSP)
Measurement point	Audio output L 〔R〕 terminal
Measuring instrument	Audio level meter
Specified value	−7.5±2dBs

[Checking Method]

1) Confirm that the audio output level is −7.5±2dBs.

4-7-8. Overall Output Level Check

Mode	Self-recoading and playback
Signal	400Hz, −7.5dBs
Measurement point	Audio output L 〔R〕 terminal
Measuring instrument	Audio level meter
Specified value	−7.5±3dBs

[Checking Method]

1) Recoad the signal.
2) Playback the recoding section.
3) Make sure that the audio output level is −7.5±3dBs.

4-7-9. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400Hz, −17.5dBs Ⓑ 30Hz, −17.5dBs Ⓒ 10Hz, −17.5dBs
Measurement point	Audio output L 〔R〕 termial
Measuring instrument	Audio level meter
Specified value	With the 400Hz playback output level as 0dB, the playback output level of 30Hz and 10kHz is 0±3dB

[Checking Method]

1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400Hz playback output level as 0dB, confirm that the playback output level of 30Hz and 10kHz is 0±3dB.

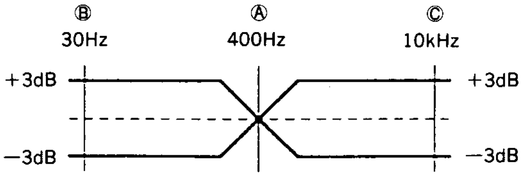


Fig. 4-35.

4-7-10. Overall Distortion Check

Mode	Self recording and playback
Signal	400Hz, −7.5dBs
Measurement point	Audio output L 〔R〕 terminal
Measuring instrument	Distorsion meter
Specified value	Less than 0.8%*1

[Checking Method]

1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.8%.*1

*1 Value when 200Hz to 3kHz BPF is used.

4-7-11. Overall Noise Level Check

Mode	Self-recording and playback
Signal	No signal (Shorting plug is inserted into audio input jack)
Measurement point	Audio L 〔R〕 input terminal
Measuring instrument	Audio level meter
Specified value	Less than −61.5dBs[*2]

[Checking Method]

1) Record the signal
2) Playback the recorded section
3) Make sure that the noise level is less than −61.5dBs.[*2]
   [*2] Value when IHF-A hearing correction filter is used.

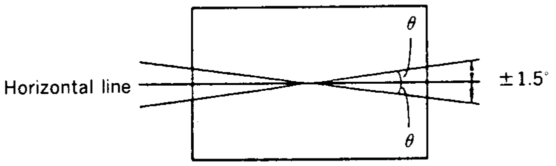
4-8. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE A) (VF-27 BOARD)

4-8-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 4-36.

[Adjustment Method]

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of the CRT screen.
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)


θ
Horizontal line
±1.5°
θ

Specified value: Image orientation within±1.5° of horizontal line.

Fig. 4-36.

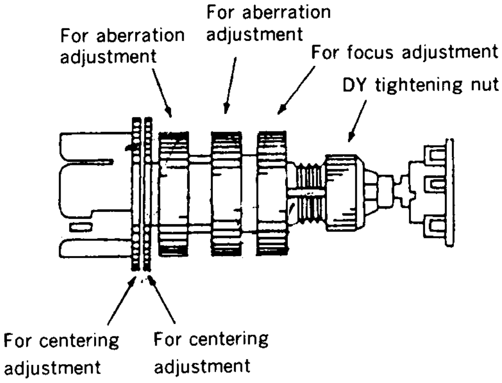

For aberration adjustment
For aberration adjustment
For focus adjustment
DY tightening nut
For centering adjustment
For centering adjustment

Fig. 4-37.

4-8-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 4-38.

[Adjustment Method]

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 4-37.)

Note : Since the centering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

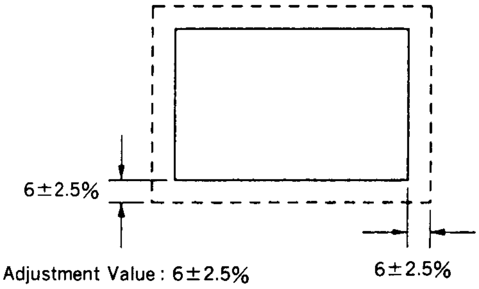


Fig. 4-38.

4-9-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion

[Adjustment Method]

1) Adjust for optimum focus using the focus ring. (See Fig. 4-37.)

4-8-4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified value	See Fig. 4-39.

[Adjustment Method]

1) Use the aberration adjustment rings to adjust any trailing dots to within 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the Centering Adjustment.

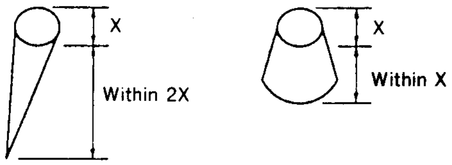


Fig. 4-39.

4-8-5. Horizontal Oscillation Frequency Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP)
Measurement point	CN904 pin ⑤
Measuring instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment element	RV901
Specified value	2.60±0.05V_{DC}

[Adjustment Method]

1) Adjust to 2.60±0.05V_{DC} using RV901.

4-8-6. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for cheking operation (WR5-5CSP) Monoscope portion
Adjustment element	C911
Specified value	6.0±3.0%

[Adjustment Method]

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV902.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of 6.0±3.0% (total of left and right).
   (See Fig. 4-41.)

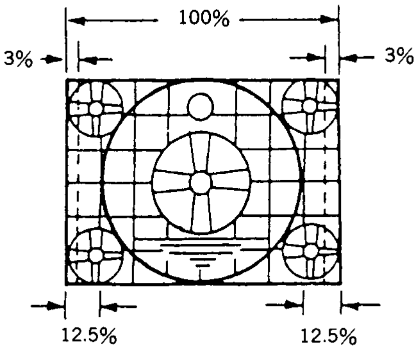
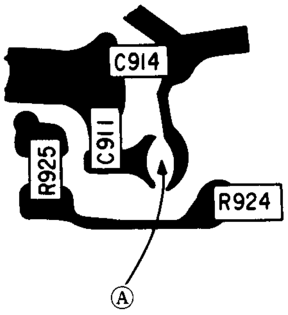


Fig. 4-40.



VF-27 Board
(conductor side)

A section	H size
Open	Large
Short	Small

Fig. 4-41.

4-8-7. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	RV902
Specified value	6.0±3.0%

[Adjustment Method]

1) By turning RV902, adjust vertical overscan to 6.0±3.0% (upper and lower total).

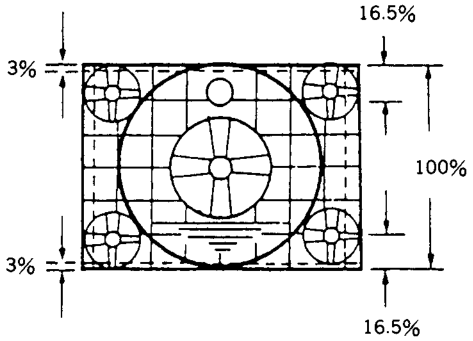


Fig. 4-42.

4-8-8. Brightness, Contrast Adjustments

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	Brightness : RV904 Contrast : RV903

[Adjustment Method]

1) Perform brightness and contrast adjustments alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

4-8-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

Values should conform to specifications given in 4-8-6. Horizontal Amplitude Adjustment and 4-8-7. Vertical Amplitude Adjustment. If not. readjust accordingly, and repeat 4-8-8. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 4-8-3. Focus Adjustment and 4-8-4. Aberration Adjustment.

4-9. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE B) (VF-26 BOARD)

4-9-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 4-44.

[Adjustment Method]

1) Adjust the volume array Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 4-45.)
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 4-43.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

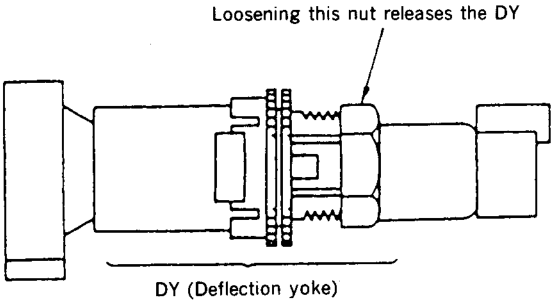
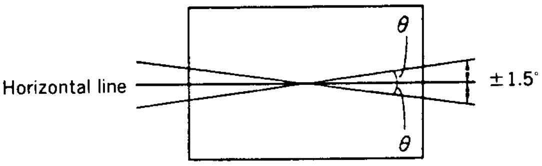

Loosening this nut releases the DY
DY (Deflection yoke)

Fig. 4-43.


θ
Horizontal line
±1.5°
θ

Specified value: Image orientation within±1.5° of horizontal line.

Fig. 4-44.

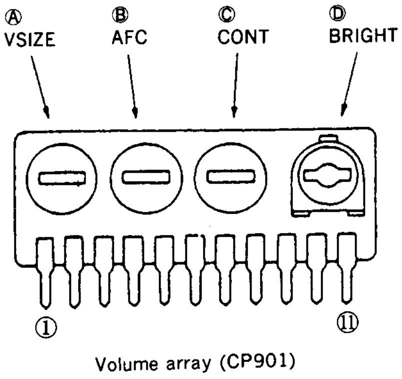

Ⓐ VSIZE
Ⓑ AFC
Ⓒ CONT
Ⓓ BRIGHT
①
⑪
Volume array (CP901)

Fig. 4-45.

4-9-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified value	See Fig. 4-47.

[Adjustment Method]

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 4-46.)

Note : Since the cenering position is affected by the earth magnetism, turn the equipment over 360° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

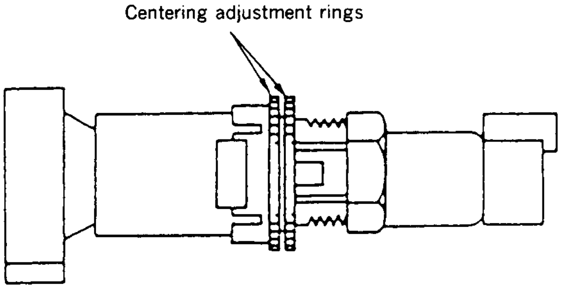
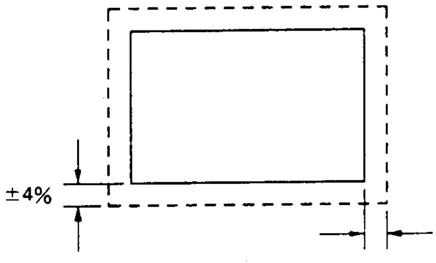

Centering adjustment rings

Fig. 4-46.



Adjustment value : ±4%

Fig. 4-47.

4-9-3. AFC Adjustment

Mode	E-E or Camera standby
Signal	Color bar
Measurement Point	C915 ⊕ side
Measuring instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment element	Volume array Ⓑ (AFC)
Specified value	2.6±0.1V_{DC}

[Adjustment Method]

1) Adjust volume array Ⓑ (AFC) for 2.6±0.1V_{DC}. (See Fig. 4-45.)

4-9-4. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	C905
Specified value	6.0±3.0%

[Adjustment Method]

1) Line up the upper and lower section of monoscope image with the upper and lower edges of the screen by rotating volume array Ⓐ (V SIZE). (See Fig. 4-45.)
2) Rotate volume array Ⓓ (BRIGHT) to set the brightness to the normal level.
3) Short or open the pattern $\boxed{A}$ of the H size adjustment capacitor (C905) to provide horizontal overscans of 6.0± 3.0% (total of left and right). (See Fig. 4-49.)

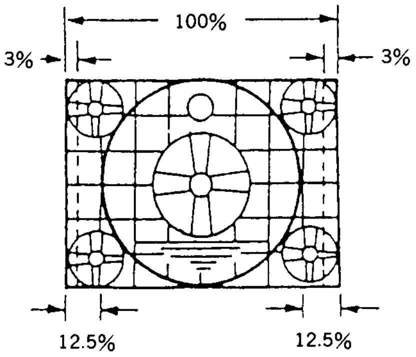
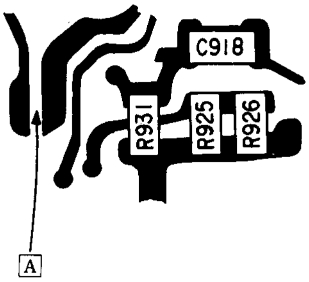


Fig. 4-48.



VF-26 Board
(conductor side)

A section	H size
Open	Large
Short	Small

Fig. 4-49.

4-9-5. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	Volume array Ⓐ (V SIZE)
Specified value	6.0±3.0%

[Adjustment Method]

1) By turning volume array Ⓐ (V SIZE), adjust vertical overscan to 6.0±3.0% (upper and lower total). (See Fig. 4-50.)

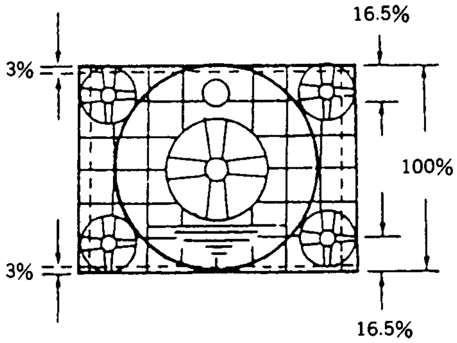


Fig. 4-50.

4-9-6. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	RV901

[Adjustment Method]

1) Adjust to the best focus point with RV901.

4-9-7. Brightness, Contrast Adjustments

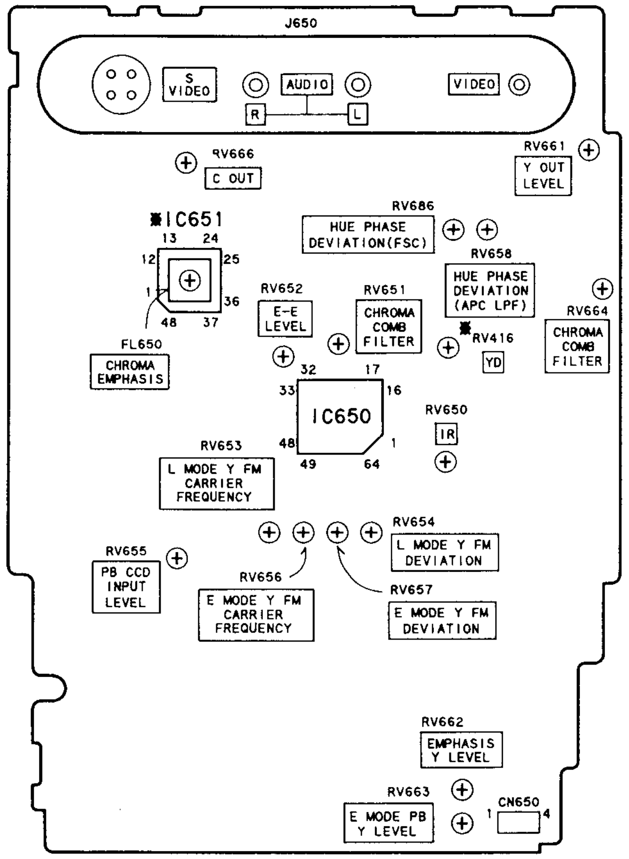
Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment element	Brightness : Volume array Ⓓ (BRIGHT) Contrast : Volume array Ⓒ (CONT)

[Adjustment Method]

1) Adjust volume array Ⓓ (BRIGHT) and Ⓒ (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest areas is possible.) (See Fig. 4-48.)

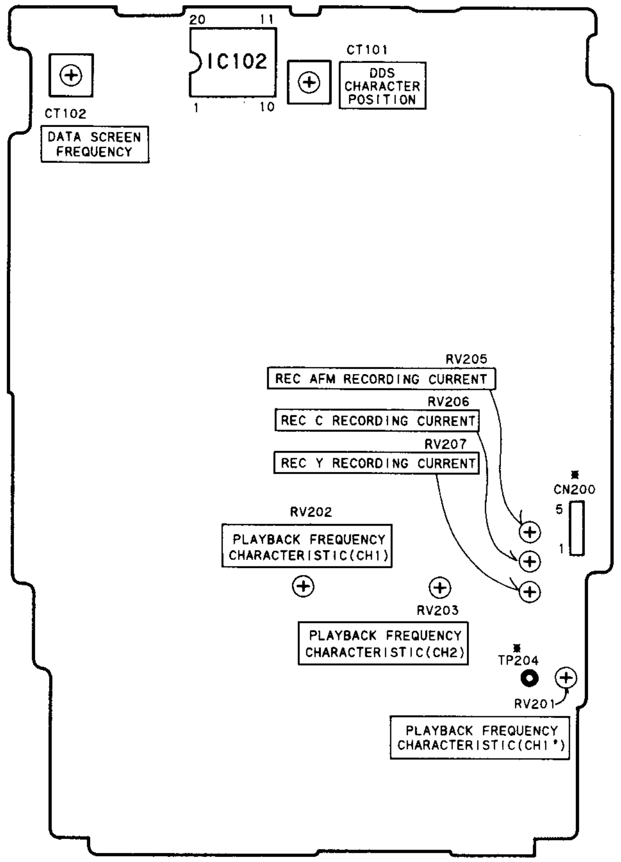
4-10. ADJUSTING PART LOCATION DIAGRAM

VA-64 BOARD (COMPONENT SIDE)


J650
S VIDEO
AUDIO
R
L
VIDEO
RV666
C OUT
RV661
Y OUT LEVEL
*IC651
13
24
12
25
1
36
48
37
FL650
CHROMA EMPHASIS
RV686
HUE PHASE DEVIATION(FSC)
RV658
HUE PHASE DEVIATION (APC LPF)
RV652
E-E LEVEL
RV651
CHROMA COMB FILTER
*RV416
YD
RV664
CHROMA COMB FILTER
32
17
33
16
IC650
48
1
49
64
RV650
IR
RV653
L MODE Y FM CARRIER FREQUENCY
RV654
L MODE Y FM DEVIATION
RV655
PB CCD INPUT LEVEL
RV656
E MODE Y FM CARRIER FREQUENCY
RV657
E MODE Y FM DEVIATION
RV662
EMPHASIS Y LEVEL
RV663
E MODE PB Y LEVEL
CN650
1
4

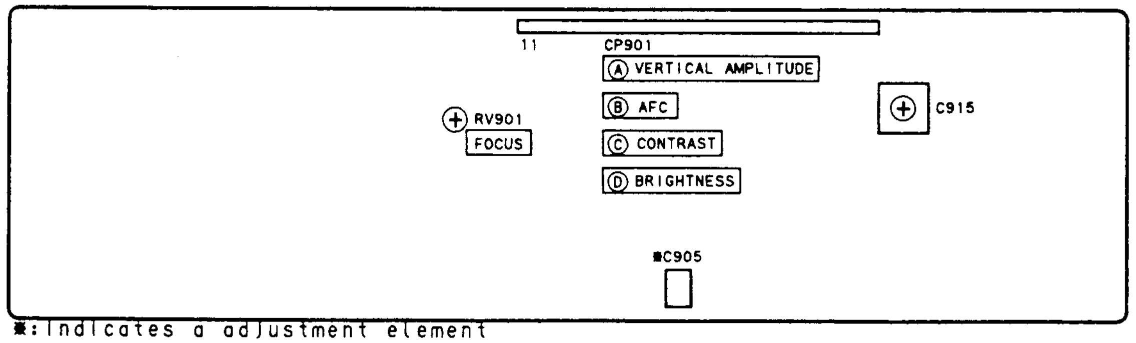
*: Indicates a adjustment element mounted on the conductor side.

SS-134 BOARD (COMPONENT SIDE)


20
11
IC102
1
10
CT102
DATA SCREEN FREQUENCY
CT101
DDS CHARACTER POSITION
RV205
REC AFM RECORDING CURRENT
RV206
REC C RECORDING CURRENT
RV207
REC Y RECORDING CURRENT
*CN200
5
1
RV202
PLAYBACK FREQUENCY CHARACTERISTIC(CH1)
RV203
PLAYBACK FREQUENCY CHARACTERISTIC(CH2)
*TP204
RV201
PLAYBACK FREQUENCY CHARACTERISTIC(CH1')

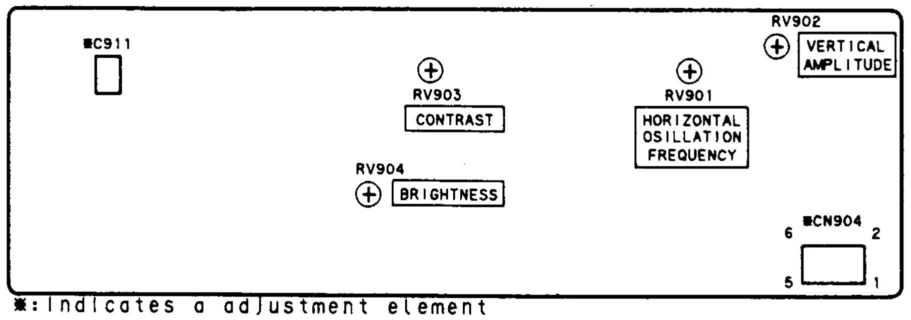
*: Indicates a adjustment element mounted on the conductor side.

VF-26 BOARD (COMPONENT SIDE)


11
CP901
Ⓐ VERTICAL AMPLITUDE
Ⓑ AFC
Ⓒ CONTRAST
Ⓓ BRIGHTNESS
RV901
FOCUS
C915
*C905

*: Indicates a adjustment element mounted on the conductor side.

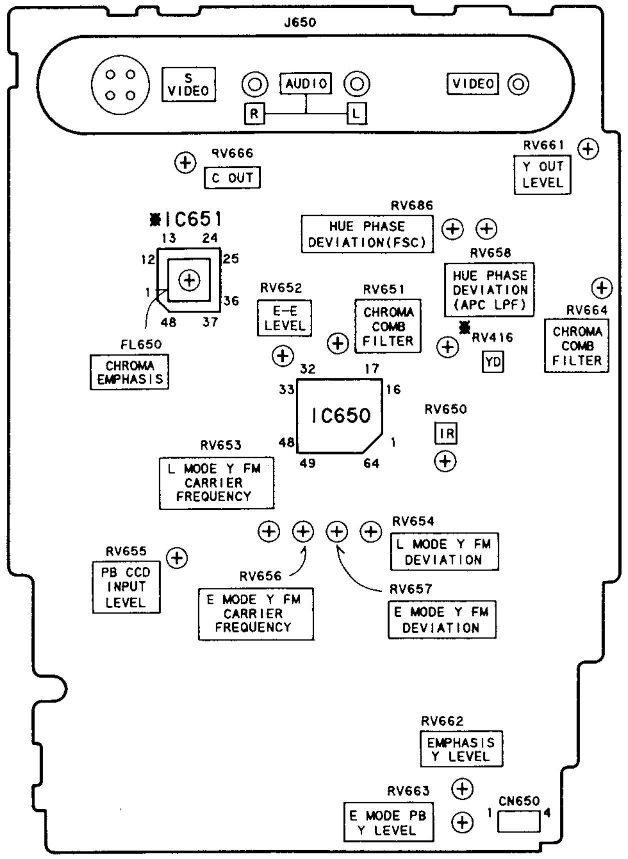
VF-27 BOARD (COMPONENT SIDE)


*C911
RV903
CONTRAST
RV904
BRIGHTNESS
RV901
HORIZONTAL OSILLATION FREQUENCY
RV902
VERTICAL AMPLITUDE
*CN904
6
2
5
1

*: Indicates a adjustment element mounted on the conductor side.

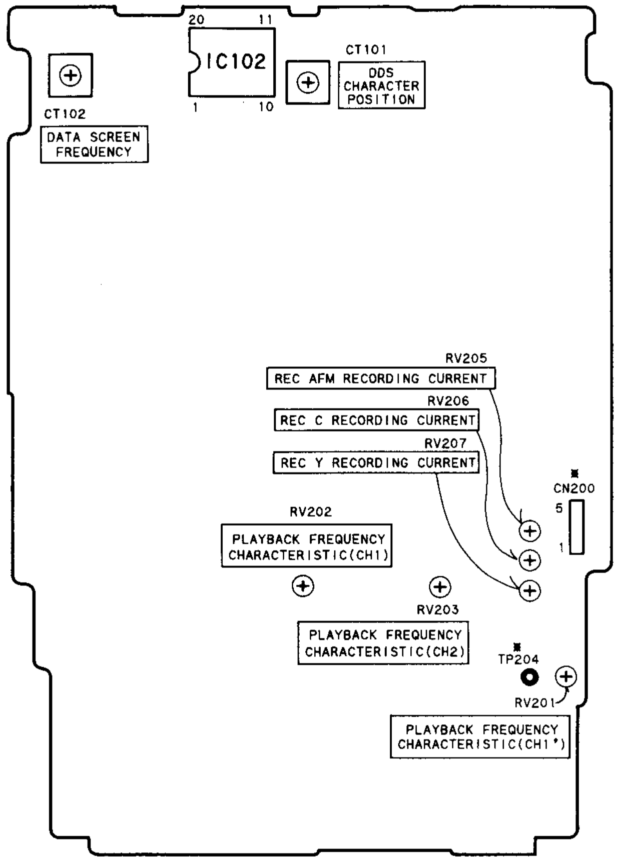
4-10. ADJUSTING PART LOCATION DIAGRAM

VA-64 BOARD (COMPONENT SIDE)


J650
S VIDEO
AUDIO
R
L
VIDEO
RV666
C OUT
RV661
Y OUT LEVEL
RV686
HUE PHASE DEVIATION(FSC)
RV658
HUE PHASE DEVIATION (APC LPF)
*IC651
13 24
12 25
1 36
48 37
FL650
CHROMA EMPHASIS
RV652
E-E LEVEL
RV651
CHROMA COMB FILTER
*RV416
YD
RV664
CHROMA COMB FILTER
32 17
33 16
IC650
48 1
49 64
RV650
IR
RV653
L MODE Y FM CARRIER FREQUENCY
RV654
L MODE Y FM DEVIATION
RV655
PB CCD INPUT LEVEL
RV656
E MODE Y FM CARRIER FREQUENCY
RV657
E MODE Y FM DEVIATION
RV662
EMPHASIS Y LEVEL
RV663
E MODE PB Y LEVEL
CN650
1 4

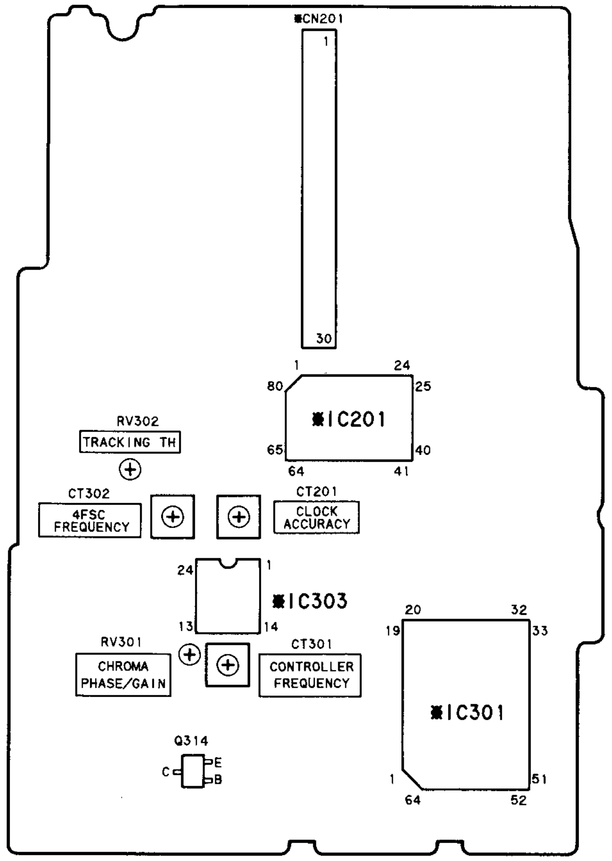
*: Indicates a adjustment element mounted on the conductor side.

SS-134 BOARD (COMPONENT SIDE)


20 11
IC102
1 10
CT101
DDS CHARACTER POSITION
CT102
DATA SCREEN FREQUENCY
RV205
REC AFM RECORDING CURRENT
RV206
REC C RECORDING CURRENT
RV207
REC Y RECORDING CURRENT
*CN200
5
1
RV202
PLAYBACK FREQUENCY CHARACTERISTIC(CH1)
RV203
PLAYBACK FREQUENCY CHARACTERISTIC(CH2)
*TP204
RV201
PLAYBACK FREQUENCY CHARACTERISTIC(CH1')

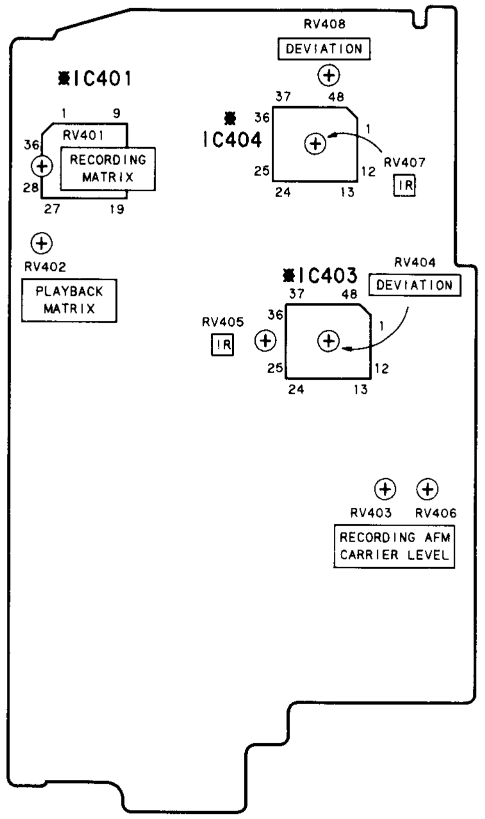
*: Indicates a adjustment element mounted on the conductor side.

FD-44 BOARD (COMPONENT SIDE)


*CN201
1
30
1 24
80 25
*IC201
65 40
64 41
RV302
TRACKING TH
CT302
4FSC FREQUENCY
CT201
CLOCK ACCURACY
24 1
*IC303
13 14
RV301
CHROMA PHASE/GAIN
CT301
CONTROLLER FREQUENCY
20 32
19 33
*IC301
1 51
64 52
Q314
C E B

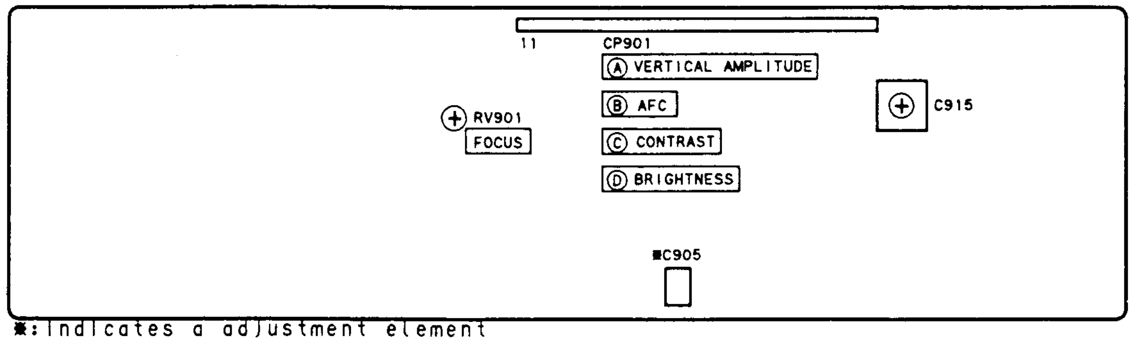
*: Indicates a adjustment element mounted on the conductor side.

AU-99 BOARD (COMPONENT SIDE)


RV408
DEVIATION
*IC401
1 9
36
RV401
RECORDING MATRIX
28
27 19
*
IC404
36
37 48
1
25
12
24 13
RV407
IR
RV402
PLAYBACK MATRIX
RV404
DEVIATION
*IC403
37 48
36
1
RV405
IR
25
12
24 13
RV403 RV406
RECORDING AFM CARRIER LEVEL

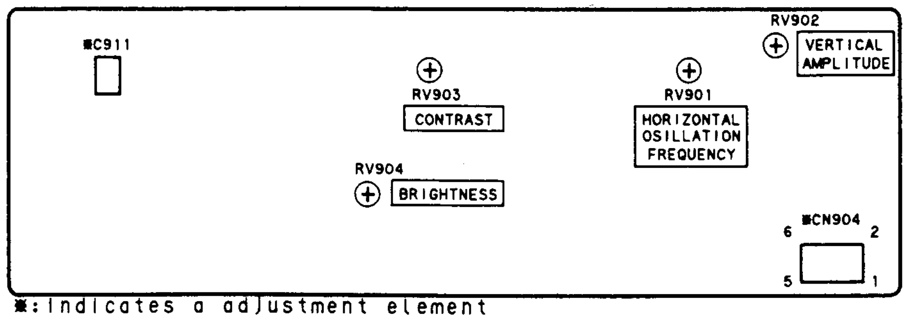
*: Indicates a adjustment element mounted on the conductor side.

VF-26 BOARD (COMPONENT SIDE)


11
CP901
Ⓐ VERTICAL AMPLITUDE
Ⓑ AFC
Ⓒ CONTRAST
Ⓓ BRIGHTNESS
RV901
FOCUS
C915
*C905

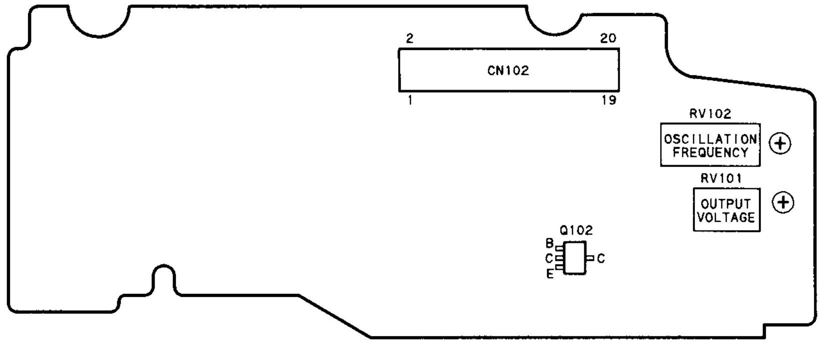
*: Indicates a adjustment element mounted on the conductor side.

VF-27 BOARD (COMPONENT SIDE)


*C911
RV902
VERTICAL AMPLITUDE
RV903
CONTRAST
RV901
HORIZONTAL OSILLATION FREQUENCY
RV904
BRIGHTNESS
*CN904
6 2
5 1

*: Indicates a adjustment element mounted on the conductor side.

FU-97 BOARD (COMPONENT SIDE)

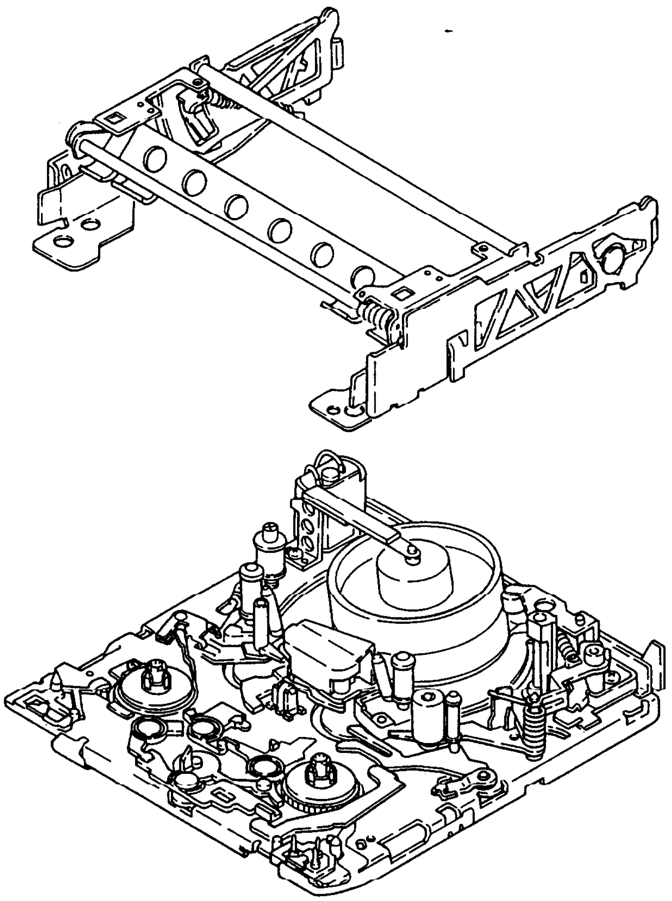

2 20
CN102
1 19
RV102
OSCILLATION FREQUENCY
RV101
OUTPUT VOLTAGE
Q102
B C E
C

mm Video MECHANICAL ADJUSTMENT MANUAL III

U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.



8 MECHANISM DECK

SONY®

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1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

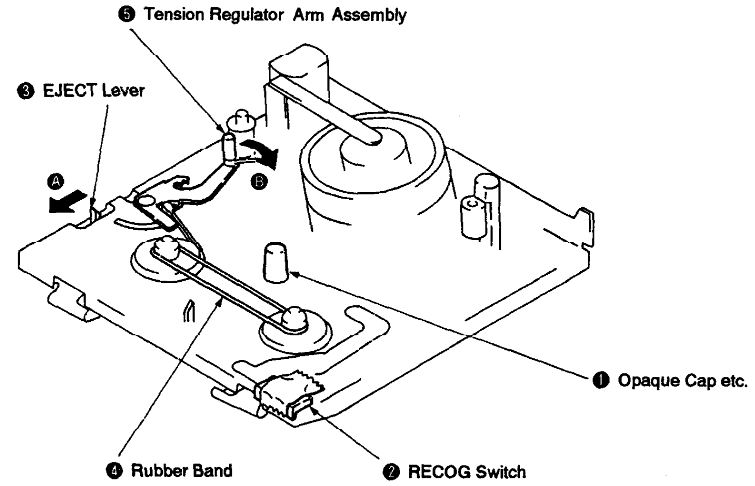


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

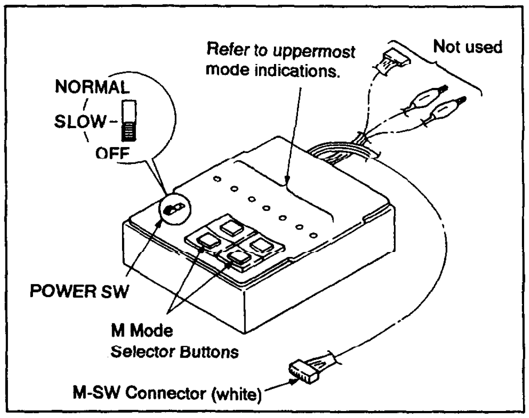

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

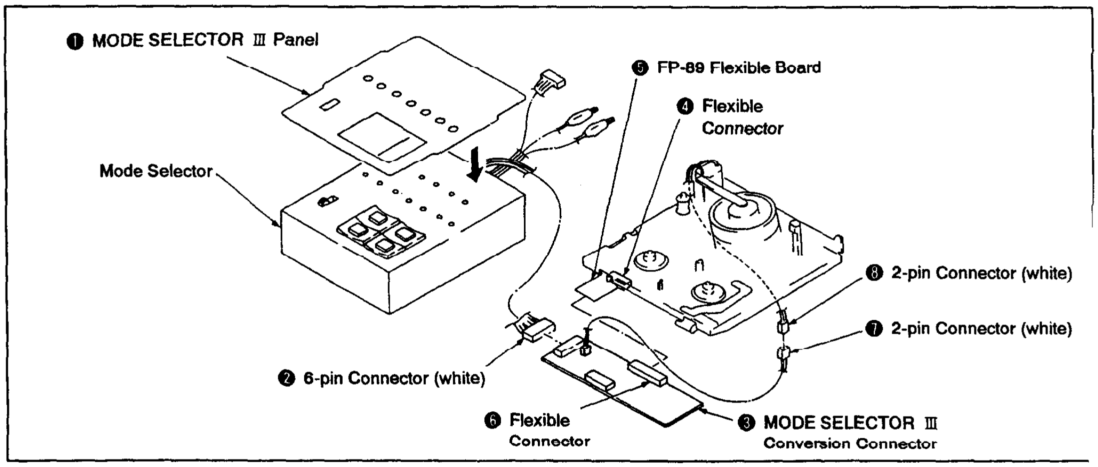

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

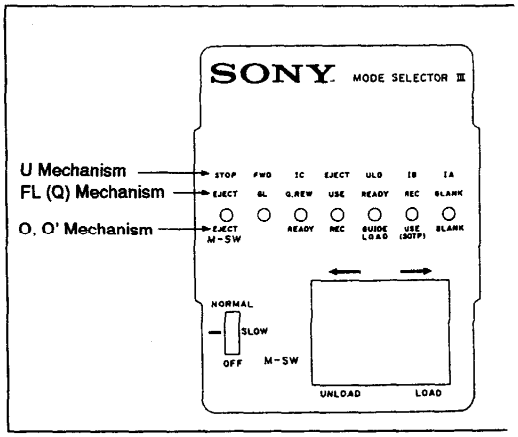

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
GL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (SOTP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

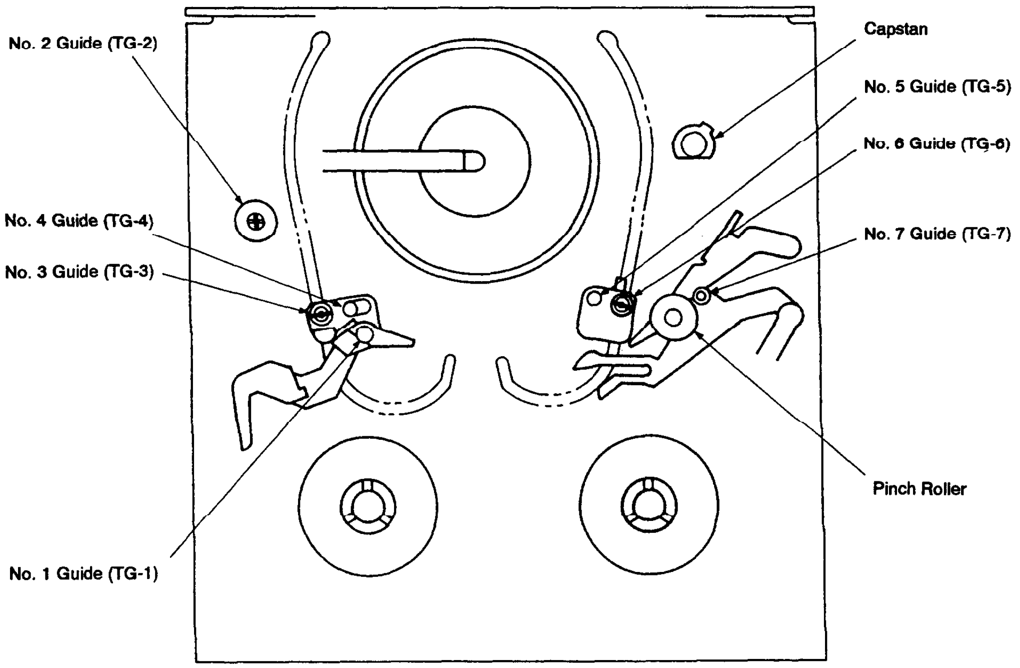


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demag-netizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Perfor-mance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

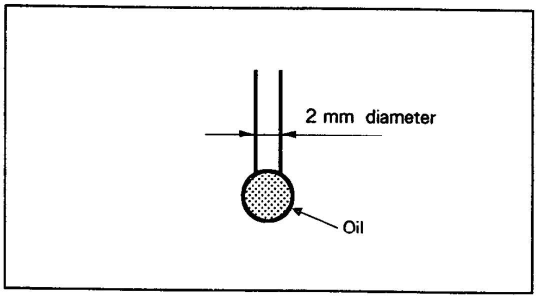


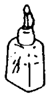
Fig. 2-2.

2-5. SERVICING TOOLS

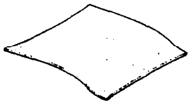
Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-624-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

Other devices: Oscilloscope
Analog tester (20 kΩ)

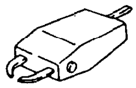
J-1



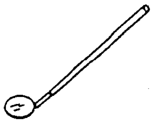
J-2



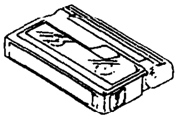
J-3



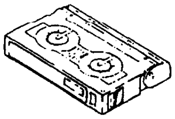
J-4



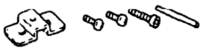
J-5



J-6

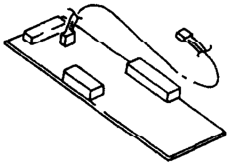


J-7

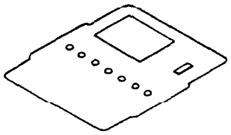


(Attached to the maintenance rotary upper drum)

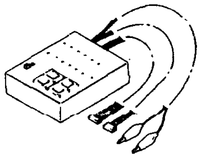
J-8



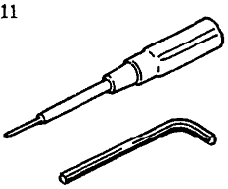
J-9



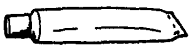
J-10



J-11



J-12



3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

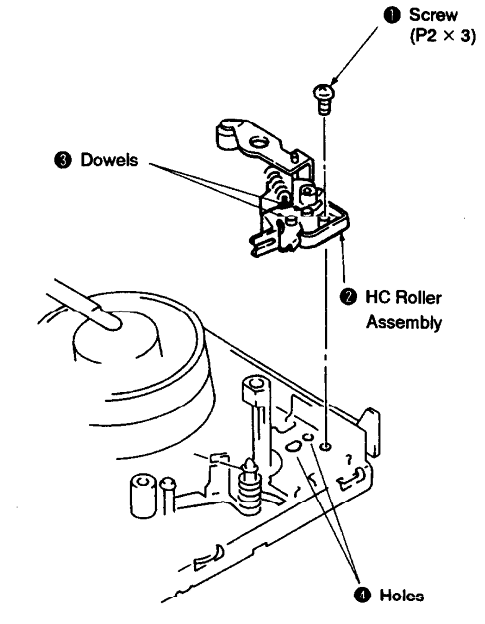
3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.



❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

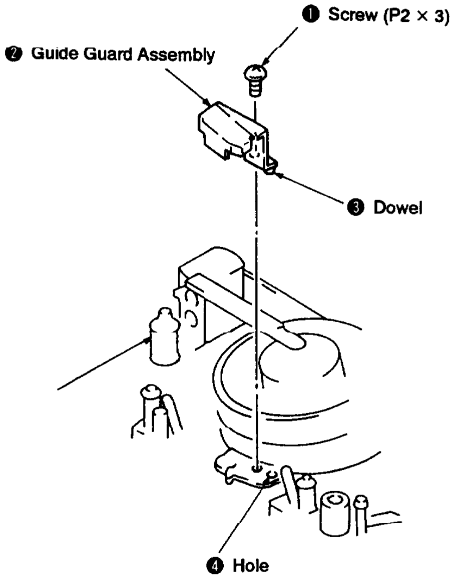
3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.



❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow Ⓐ as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow Ⓑ as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

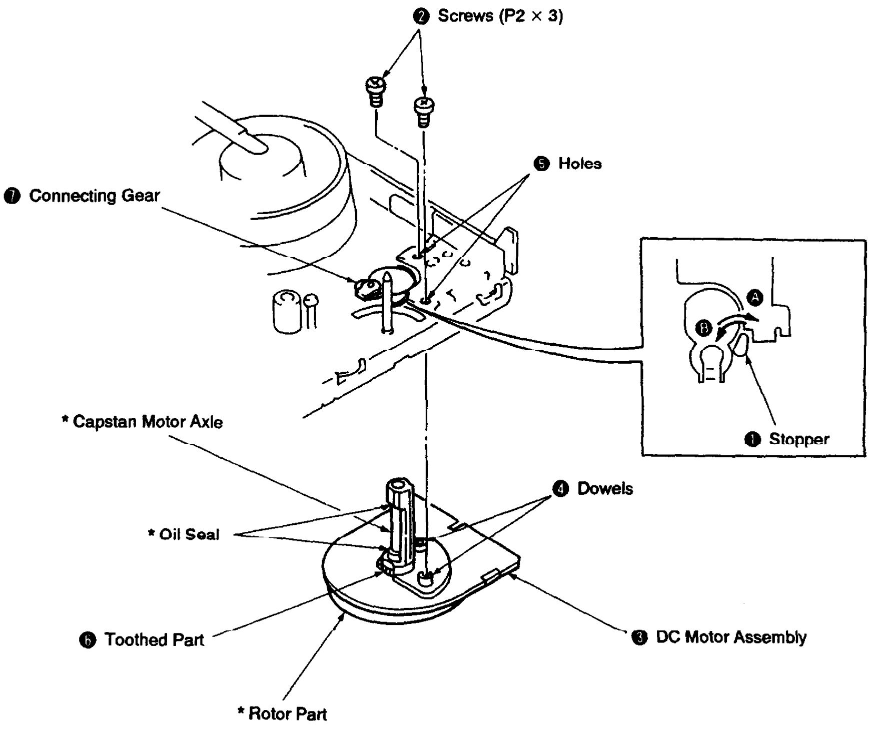

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
Ⓐ
Ⓑ
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ①.
2) Remove the axle holding pin ②, then remove the T brake ③.
3) Remove the axle holding pin ④, then remove the S brake ⑤.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ⑥ into the notch ⑦, mount the S brake ⑤.
2) Insert the axle holding pin ④.
3) Insert the axle ⑧ to the S reel side of the brake release arm ⑨ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ③.
4) Insert the axle holding pin ②.
5) Insert the torsion coil spring (ST) ① below the claw ⑪ of the axle ⑩, then hook it to two claws ⑫.

Note: Confirm that the claws of axle holding pins ② and ④ are not broken before assembling.

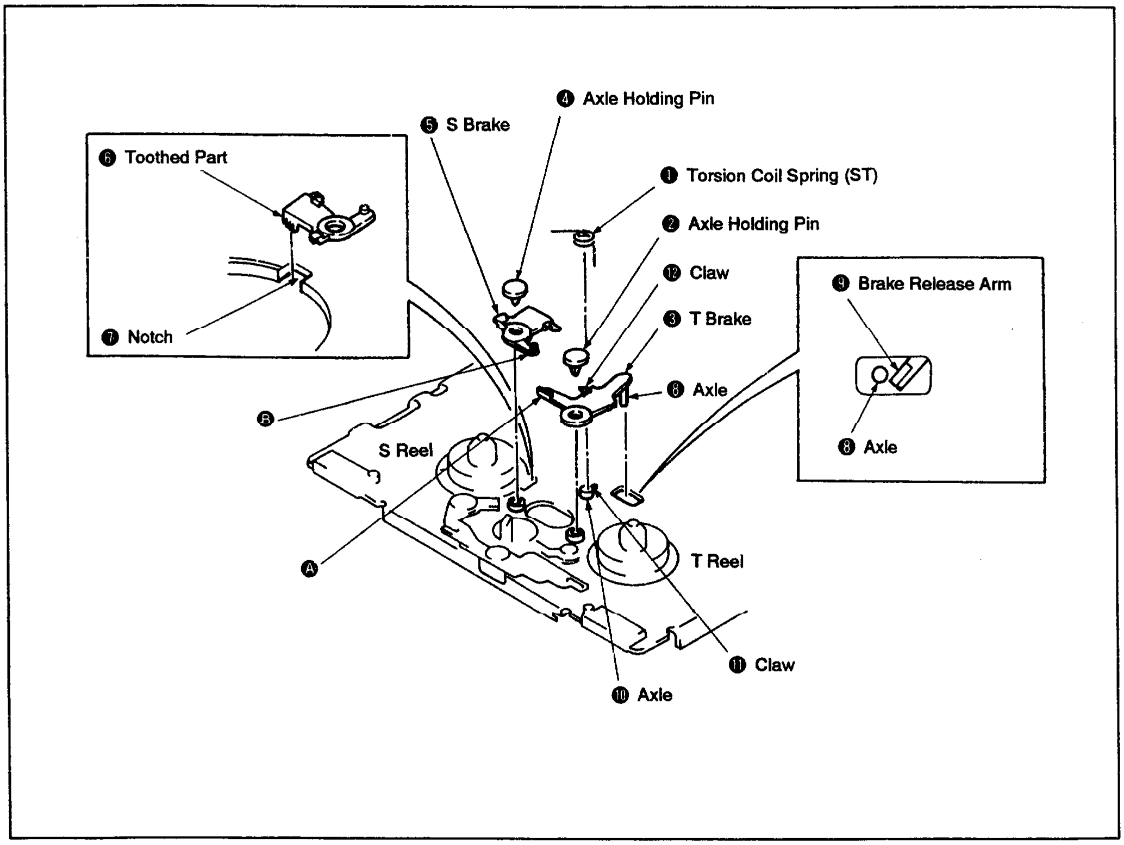

④ Axle Holding Pin
⑤ S Brake
⑥ Toothed Part
⑦ Notch
① Torsion Coil Spring (ST)
② Axle Holding Pin
⑫ Claw
③ T Brake
⑨ Brake Release Arm
⑧ Axle
Ⓑ
S Reel
⑧ Axle
Ⓐ
T Reel
⑪ Claw
⑩ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ①, then remove the TL holding plate ②.
2) Remove the axle holding pin ③, then remove the LB brake ④.
3) Remove the axle holding pin ⑤, then remove the LB lever ⑥.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ⑥ matching it to pin ⑦ of the LB gear, then secure it with the axle holding pin ⑤.
2) Insert the pin ⑧ into the notch ⑨ of the LB lever ⑥, then mount the LB brake ④ while inserting the toothed part ⑩ into the notch ⑪.
3) Insert the axle holding pin ③.
4) Align the dowel ⑫ with the hole ⑬, then mount the TL holding plate and secure it with the screw ①.

Note: Confirm that the claws of axle holding pins ③ and ⑤ are not broken before assembling.

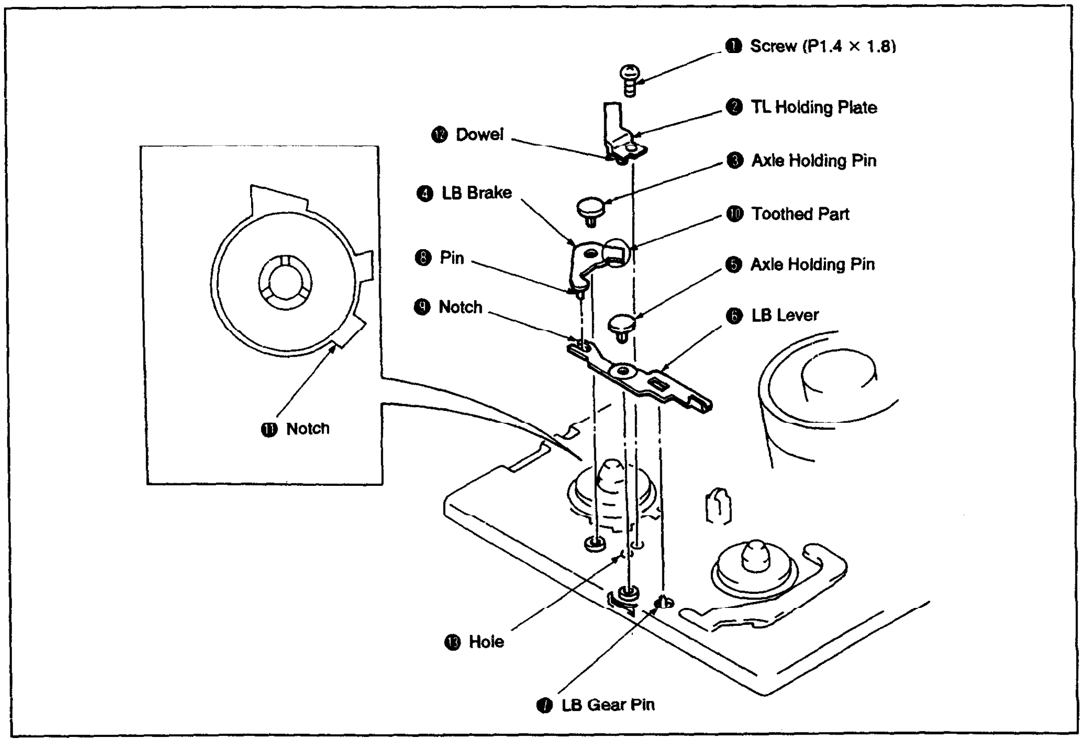

① Screw (P1.4 × 1.8)
② TL Holding Plate
⑫ Dowel
③ Axle Holding Pin
④ LB Brake
⑩ Toothed Part
⑧ Pin
⑤ Axle Holding Pin
⑨ Notch
⑥ LB Lever
⑪ Notch
⑬ Hole
⑦ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ❶ in the direction of the arrow, remove the LB release arm ❷.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ❷ to the axle ❸, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ❹, then secure with the claw ❶.

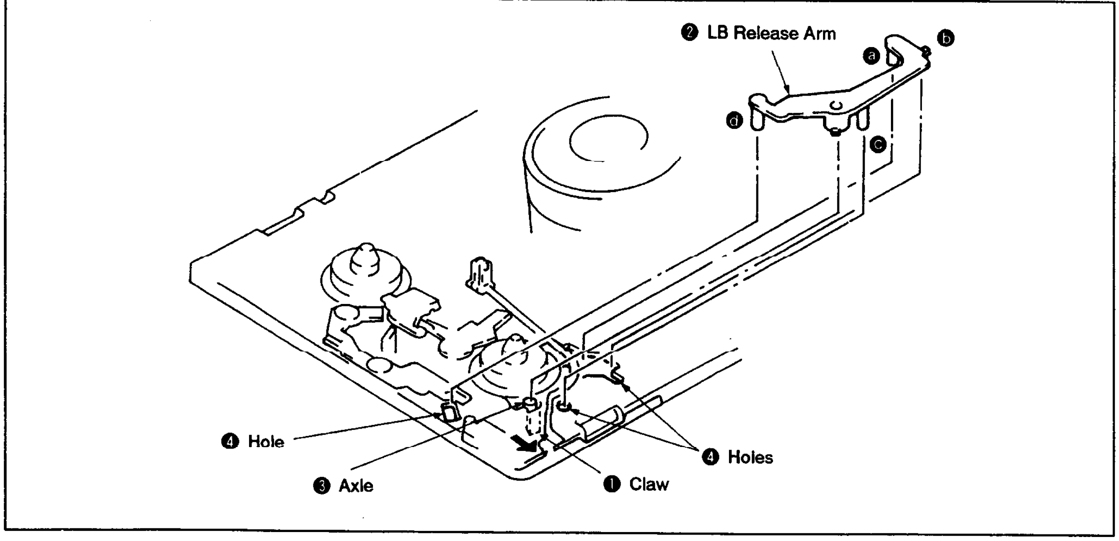

❷ LB Release Arm
ⓐ
ⓑ
ⓒ
ⓓ
❹ Hole
❸ Axle
❶ Claw
❹ Holes

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ❶.
2) Open the chassis claw ❷, then remove the RK stopper arm ❸.
3) Remove the RK stopper ❹.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ❹ onto the axle ❺.
2) Mount the RK stopper arm ❸ onto the axle ❻, insert Pin ❿ into hole ⓫, then hook the claw ❷ of the chassis to the hole ❼.
3) Insert the torsion coil spring (RK) ❶ into the axle ❺, then hook it to claws ❽ and ❾.

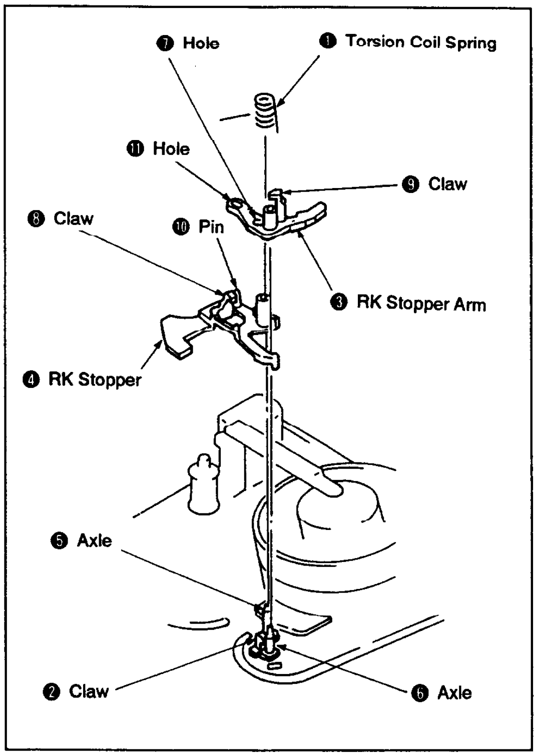

❼ Hole
❶ Torsion Coil Spring
⓫ Hole
❾ Claw
❽ Claw
❿ Pin
❸ RK Stopper Arm
❹ RK Stopper
❺ Axle
❷ Claw
❻ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the ⓑ part.
7) Install the stopper washer ❶.

Note:
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

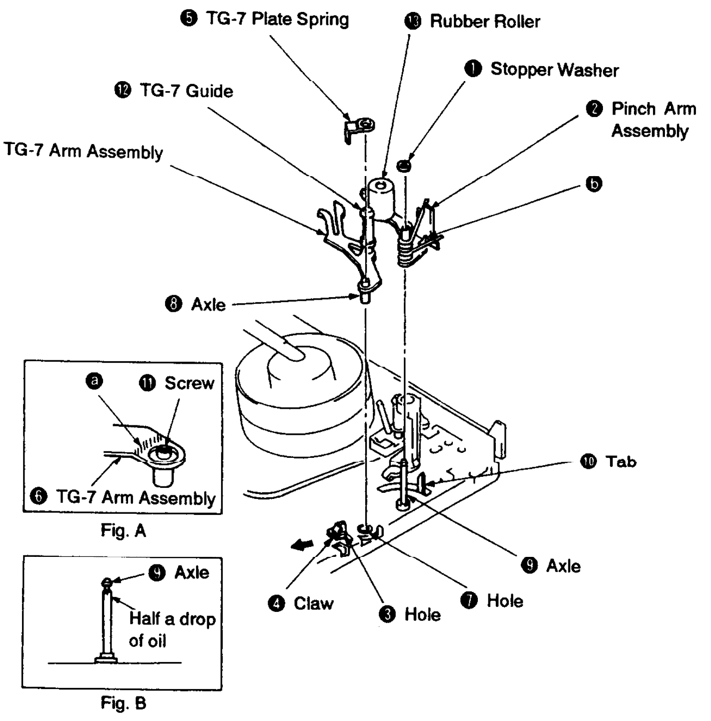

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
ⓑ
❽ Axle
ⓐ
⓫ Screw
❻ TG-7 Arm Assembly
❿ Tab
❾ Axle
❹ Claw
❸ Hole
❼ Hole
❾ Axle
Half a drop of oil

Fig. A

Fig. B

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

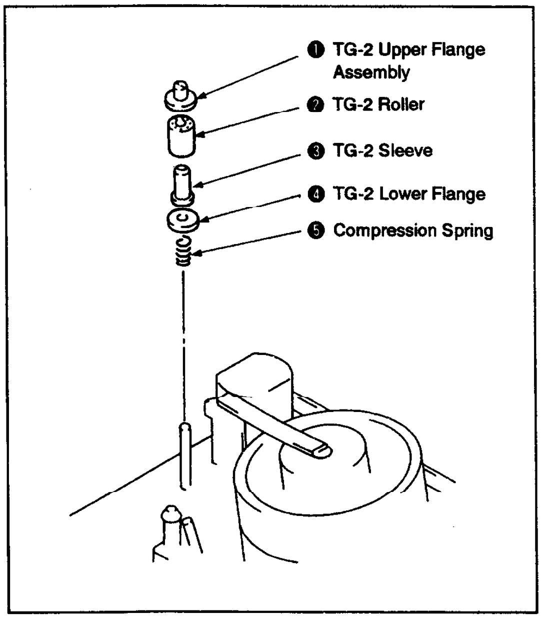

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

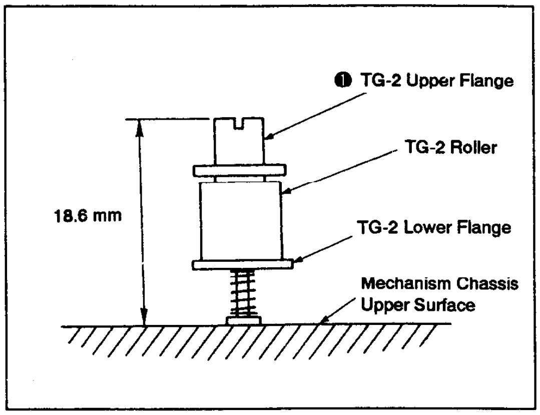

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ①.
5) Turn the stopper ② approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ③ in the direction of the arrow Ⓑ, remove the T reel table assembly ④.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ⑤ (See Fig. A).
2) Move the RK gear ⑥ in the direction of the arrow Ⓒ and the TS brake ⑦ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ③ in the direction of the arrow Ⓑ, mount the T reel table assembly ④ onto the axle ⑤, then turn the stopper ② in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ⑧ (See Fig. B).
5) Move the RK gear ⑥ in the direction of the arrow Ⓕ, the UL brake ⑨ in the direction of the arrow Ⓖ and the LB brake ⑩ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ① onto the axle ⑧.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

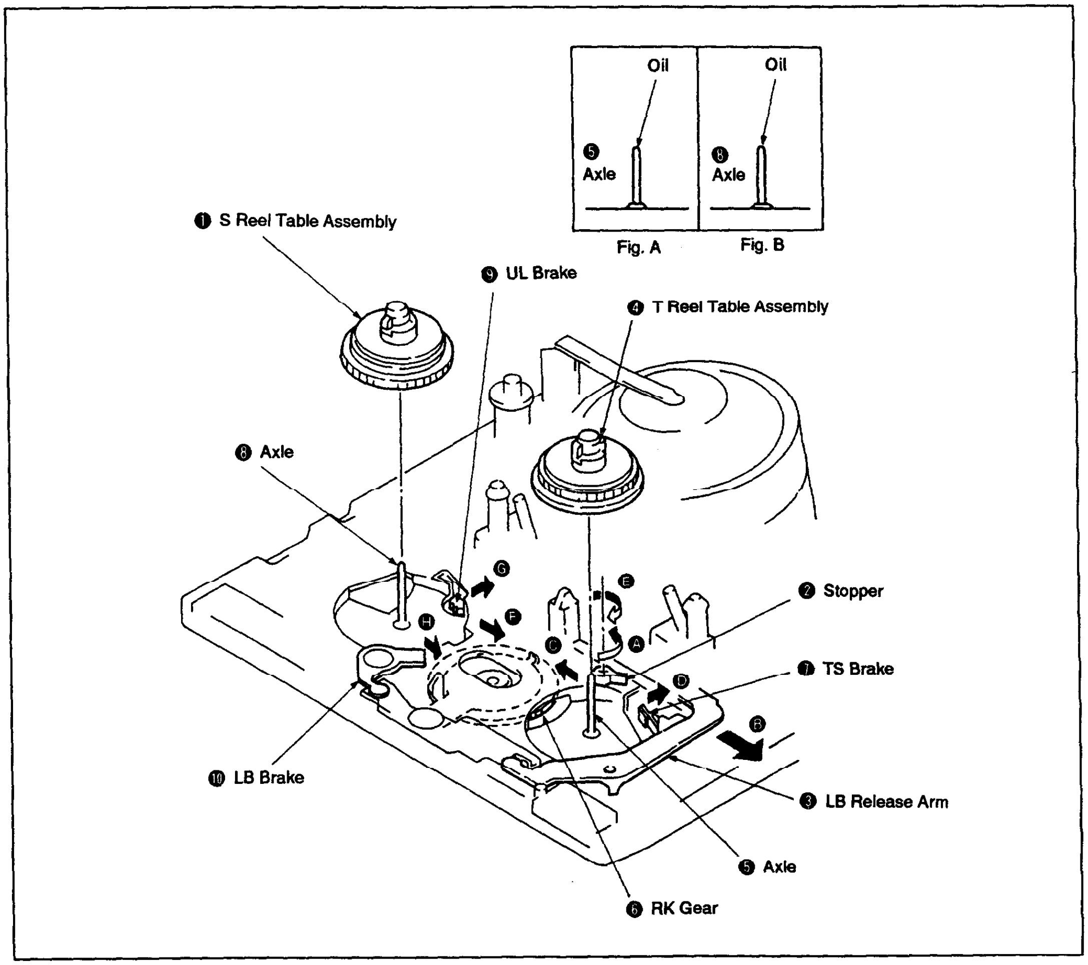

Oil
⑤ Axle
Fig. A
Oil
⑧ Axle
Fig. B
① S Reel Table Assembly
⑨ UL Brake
④ T Reel Table Assembly
⑧ Axle
Ⓖ
Ⓔ
② Stopper
Ⓕ
Ⓗ
Ⓒ
Ⓐ
⑦ TS Brake
Ⓓ
Ⓑ
⑩ LB Brake
③ LB Release Arm
⑤ Axle
⑥ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

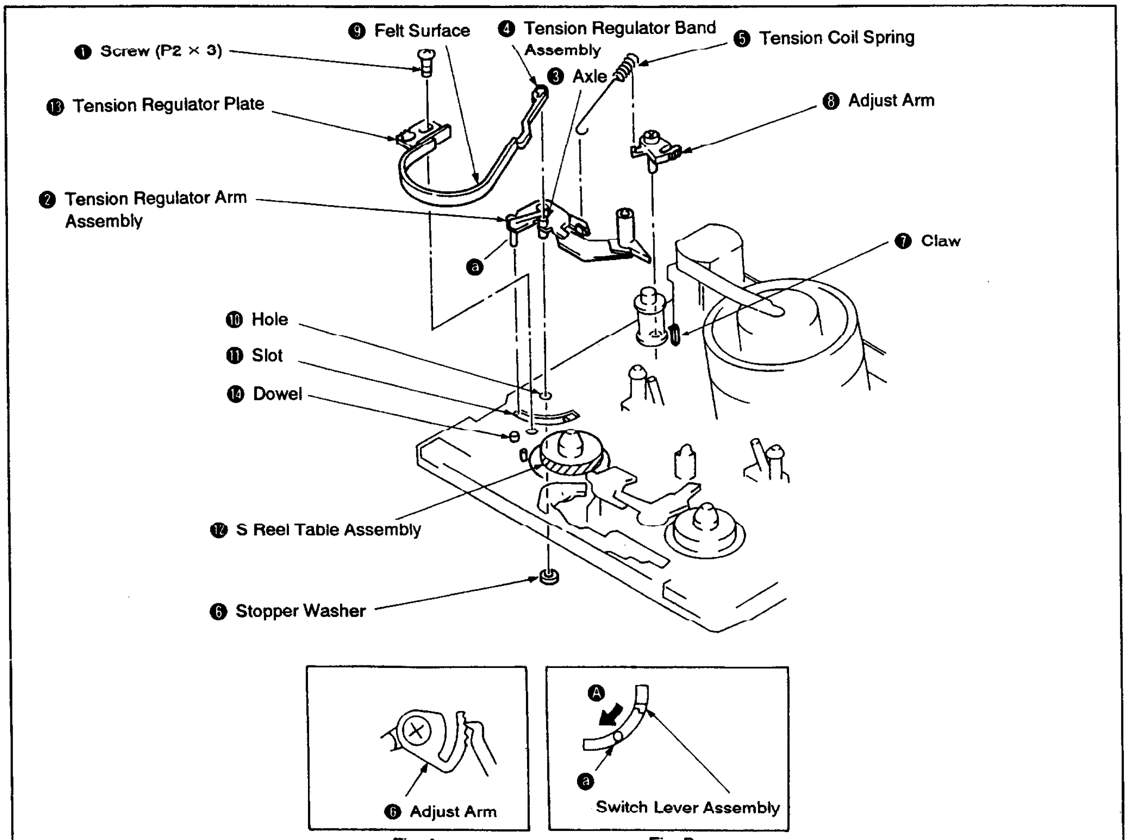

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❺ Tension Coil Spring
❸ Axle
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
❼ Claw
ⓐ
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
Ⓐ
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the FWD mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

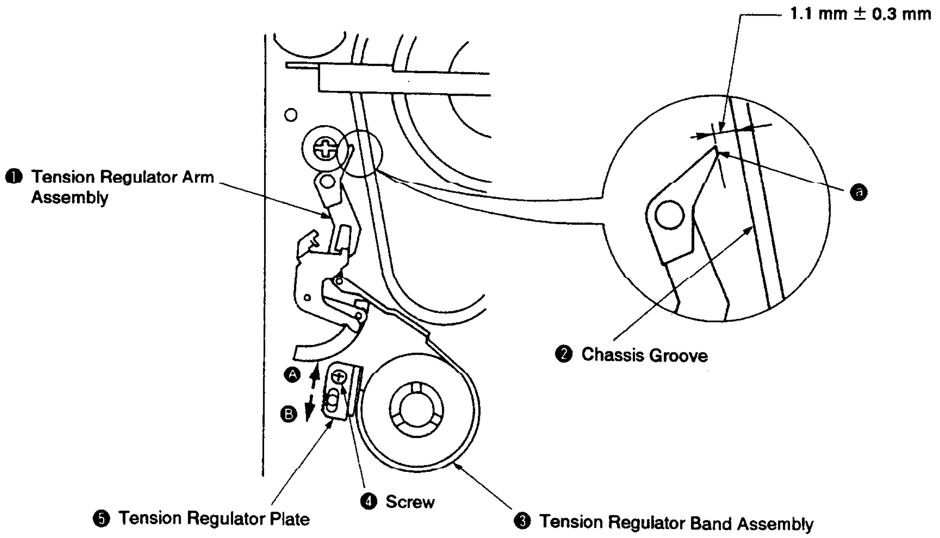

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ① and the two connectors ②.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ③, then remove the axle ground terminal ④.
5) Remove the three screws ⑤, then remove the drum assembly ⑥ from the mechanism chassis.
6) Remove the connector ⑩
7) Remove the screw ⑦, then remove the dew sensor ⑧.

Note:
- When removing the drum assembly ⑥ from the mechanism chassis, take care not to cut the flexible board ① or the harness.
- Take care not to touch the head tip ⑨.

2. Installation (See Fig. 3-14.)

1) Insert part ⓐ of the dew sensor ⑧ into the notch ⑪ of the mechanism chassis, then secure it with the screw ⑦.
2) Mount the connector ⑩.
3) Clamp the harness ⑮ of the dew sensor ⑧ with the reinforcing the claw ⑯ of the plate SS assembly (See Fig. A).
4) Insert the connector ② and the flexible board ① into the hole ⑫ of the mechanism chassis, align the drum assembly ⑥ with the two dowels ⑬ and secure it with the three screws ⑤.
5) Align the axle ground terminal ② with the two dowels ⑭ of the mechanism chassis and secure it with the screw ③.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ② and the flexible board ①.

Note:
- Take care not to cut the flexible board ① or the harness ⑮.
- Take care not to touch the head tip ⑨.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

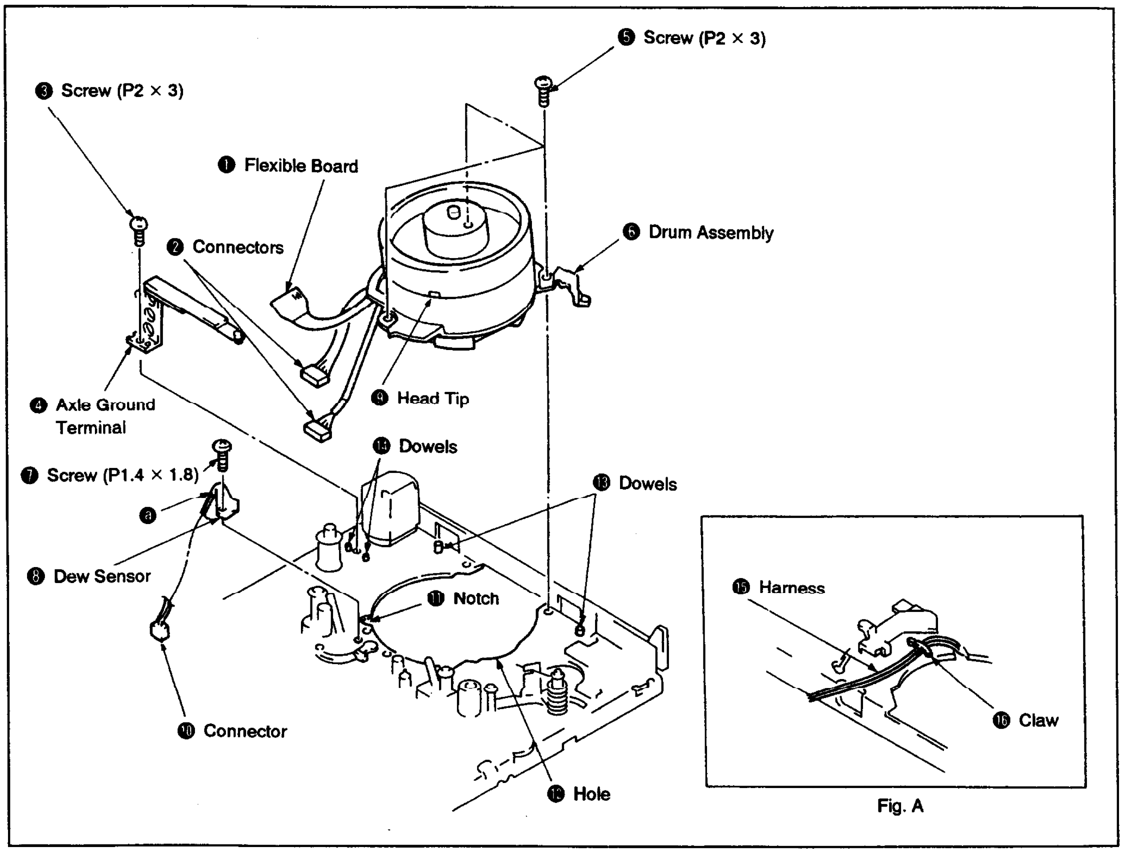

⑤ Screw (P2 × 3)
③ Screw (P2 × 3)
① Flexible Board
② Connectors
⑥ Drum Assembly
④ Axle Ground Terminal
⑨ Head Tip
⑭ Dowels
⑦ Screw (P1.4 × 1.8)
⑬ Dowels
ⓐ
⑧ Dew Sensor
⑪ Notch
⑮ Harness
⑯ Claw
⑩ Connector
⑫ Hole
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the STOP mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓬.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow Ⓐ side of the switch lever assembly ❹.

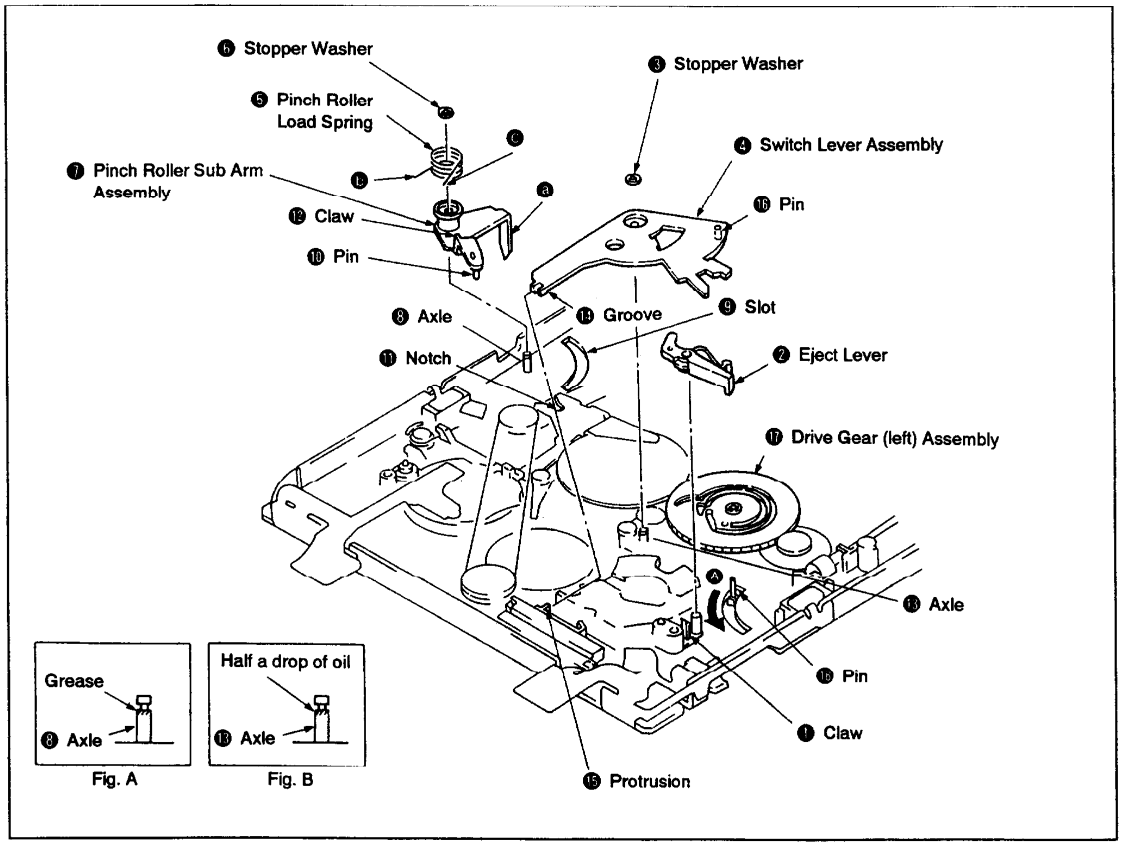

❻ Stopper Washer
❺ Pinch Roller Load Spring
❼ Pinch Roller Sub Arm Assembly
ⓑ
ⓒ
ⓐ
⓬ Claw
❿ Pin
❽ Axle
⓫ Notch
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
⓮ Groove
❾ Slot
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Fig. A
Half a drop of oil
⓭ Axle
Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺.
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow Ⓐ.
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow Ⓑ.
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺.

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ.

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺. (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰.
4) Turn the stopper ❾ in the direction of the arrow Ⓒ as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬, secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮.
7) Install the stopper washer ❻.
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺. (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯.
10) Install the stopper washer ❶.
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

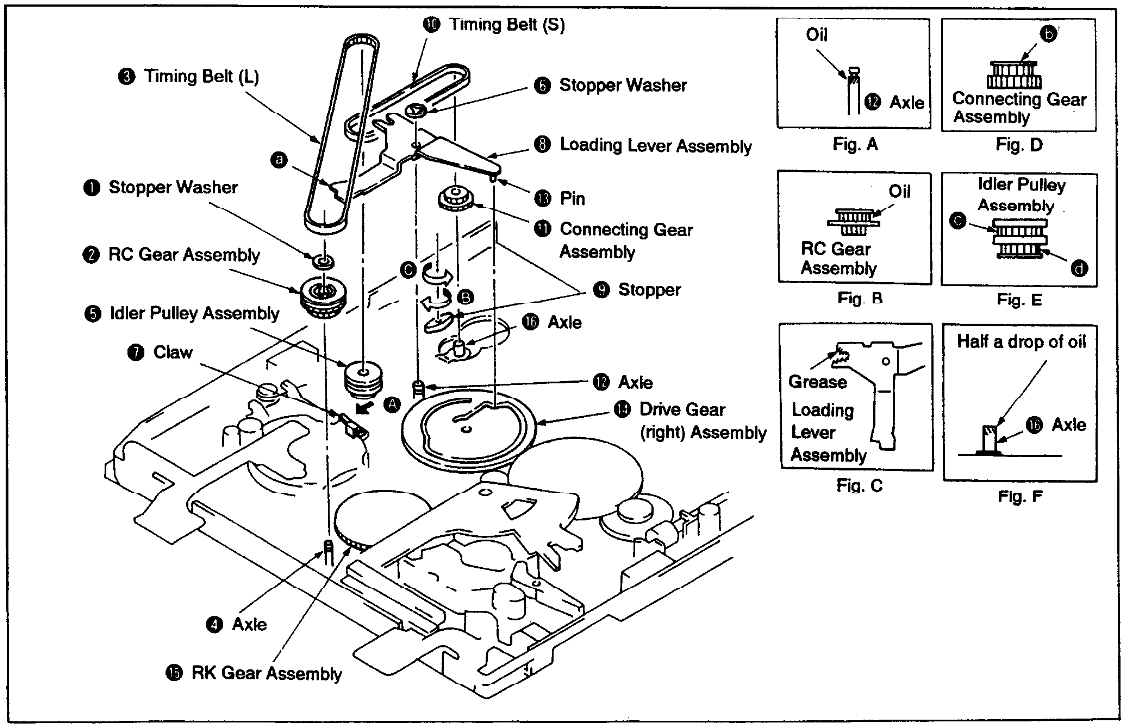

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
Ⓒ
Ⓑ
❾ Stopper
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
Ⓐ
⓬ Axle
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓮ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓮, then secure it with the stopper washer ❶.
9) Mount the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

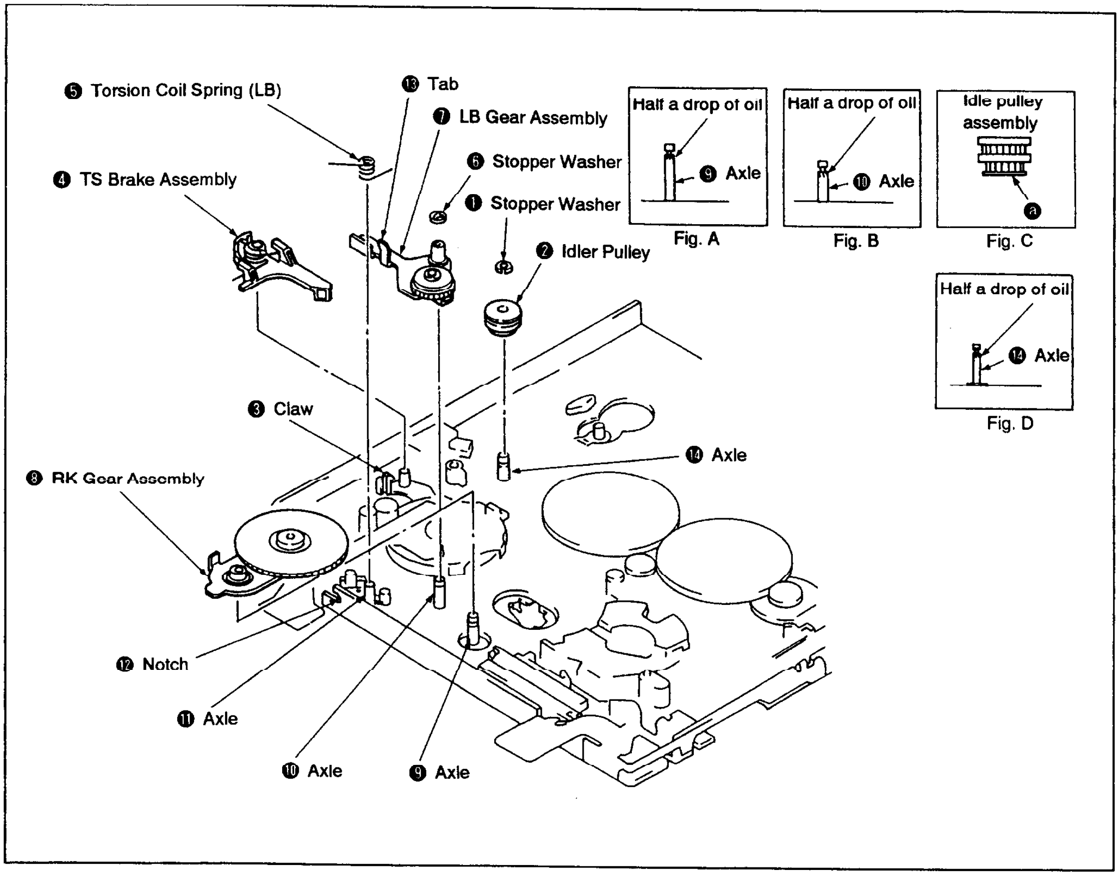

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❹ TS Brake Assembly
❻ Stopper Washer
❶ Stopper Washer
❷ Idler Pulley
Half a drop of oil
❾ Axle
Fig. A
Half a drop of oil
❿ Axle
Fig. B
Idle pulley assembly
ⓐ
Fig. C
Half a drop of oil
⓮ Axle
Fig. D
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶, then remove the UL gear ❷.
3) Remove the UL arm ❸, the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

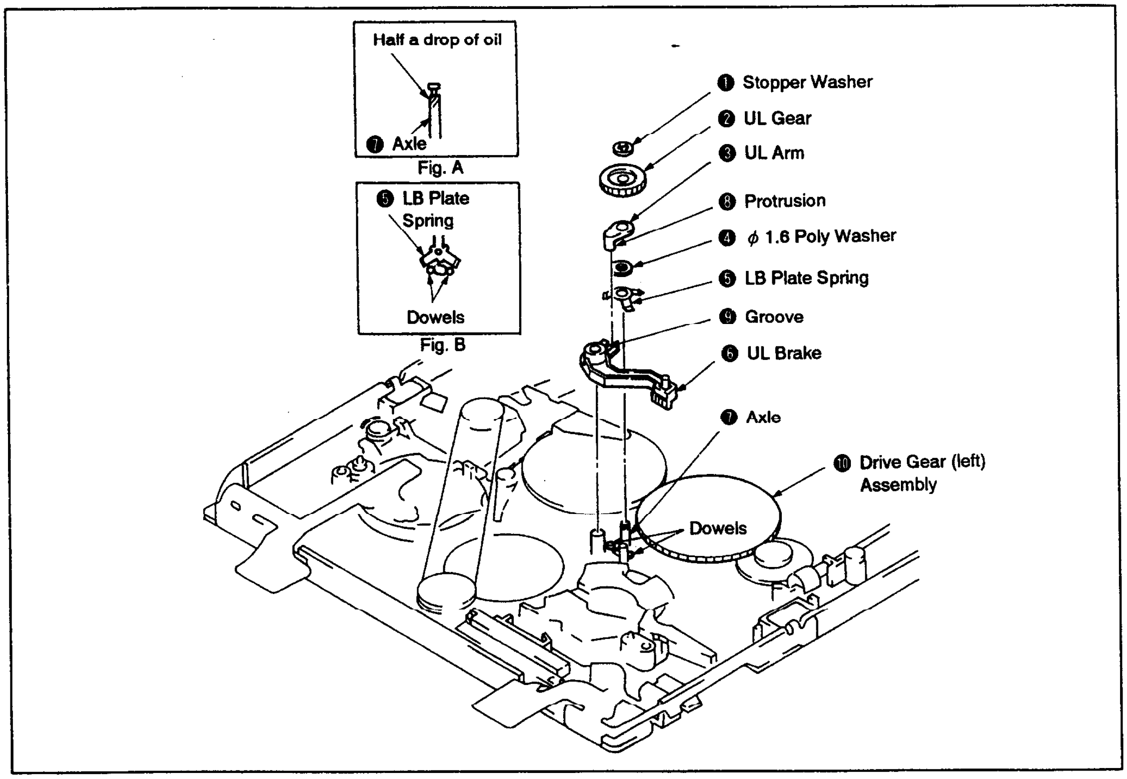

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (right) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate TT ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (right) assembly ❼ .

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾ , axle ❿ and dowel ⓮ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow 🅐 to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽ , and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the 🅐 part with the 🅑 part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸ .
8) Install the stopper washer 1.5 ❻ .
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾ , then secure with the screw ❶ .
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

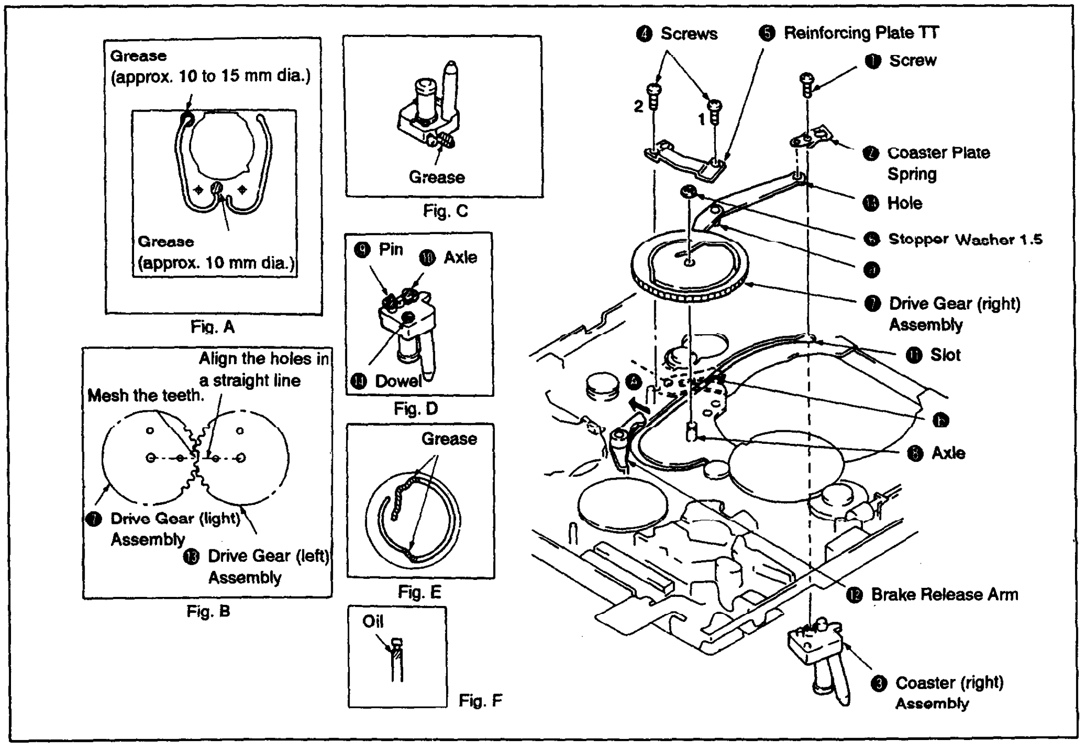

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Grease
❾ Pin
❿ Axle
⓮ Dowel
Grease
Oil
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓮ Hole
❻ Stopper Washer 1.5
🅐
❼ Drive Gear (right) Assembly
⓫ Slot
🅐
🅑
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. F

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (left) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate SS assembly ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (left) assembly ❼ .

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾ , axle ❿ and dowel ⓰ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽ , and mount so that the gear engages with the wheel gear ⓭ and the UL gear ⓮ .
6) Align the ⓐ part with the slot ⓫ , and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸ .
7) Install the stopper washer 1.5 ❻ .
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸ , then secure with the screw ❶ .
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯ , then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

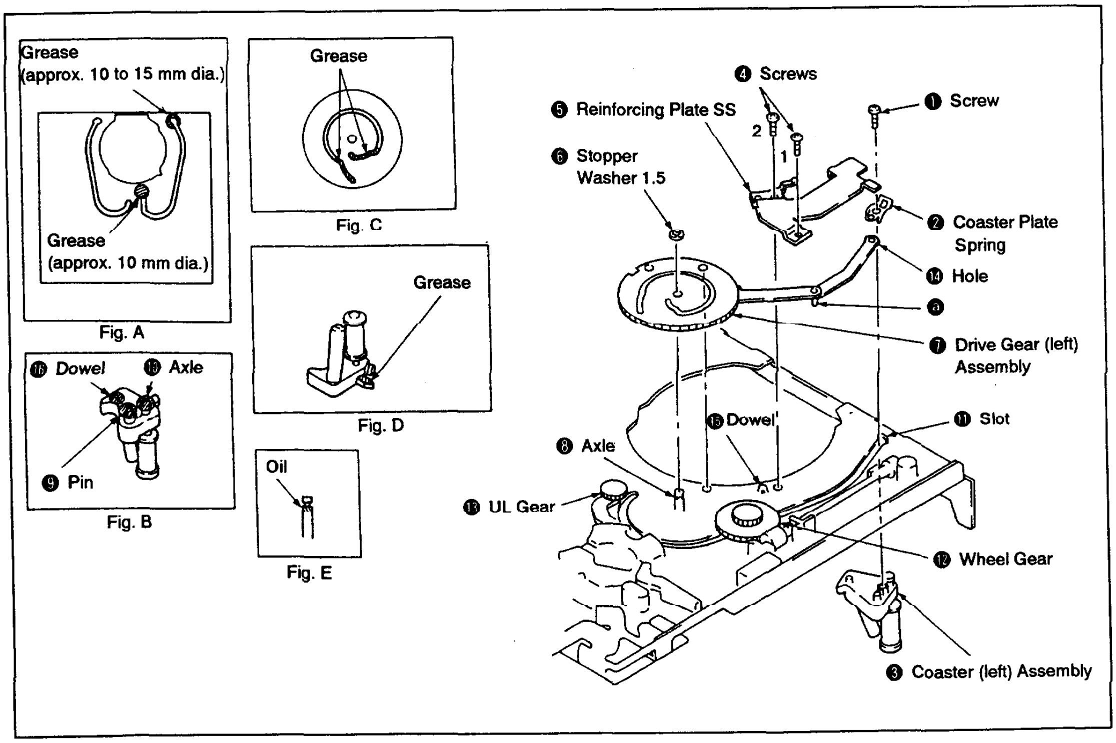

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
⓰ Dowel
❿ Axle
❾ Pin
Grease
Grease
Oil
❹ Screws
❺ Reinforcing Plate SS
2
1
❻ Stopper Washer 1.5
❶ Screw
❷ Coaster Plate Spring
⓮ Hole
ⓐ
❼ Drive Gear (left) Assembly
⓯ Dowel
❽ Axle
⓫ Slot
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

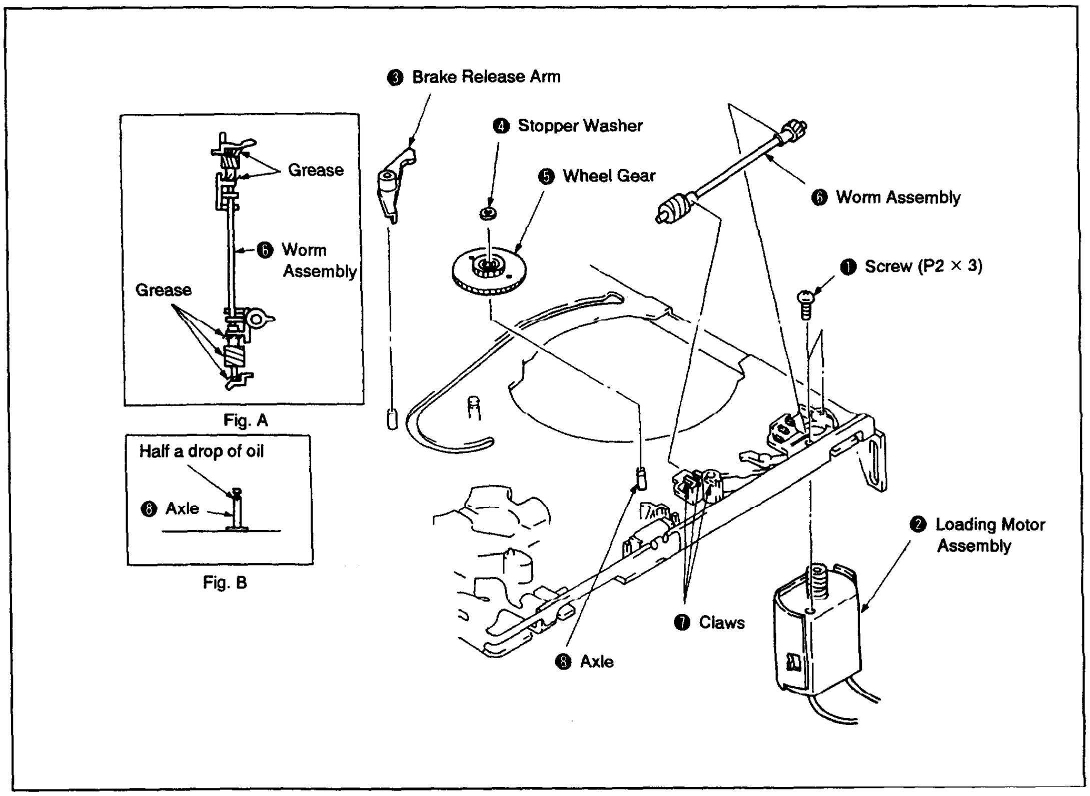

Grease
❻ Worm Assembly
Grease
Fig. A
Half a drop of oil
❽ Axle
Fig. B
❸ Brake Release Arm
❹ Stopper Washer
❺ Wheel Gear
❻ Worm Assembly
❶ Screw (P2 × 3)
❷ Loading Motor Assembly
❼ Claws
❽ Axle

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

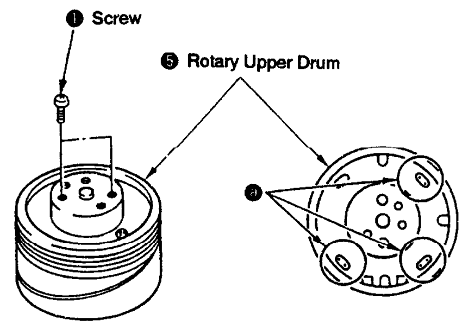


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.

   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).

   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

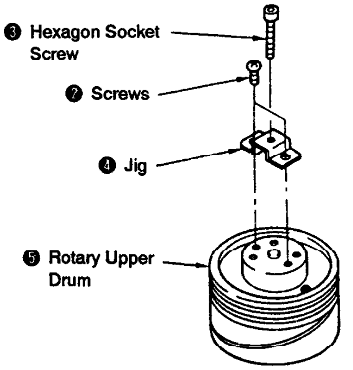


Fig. 3-23.

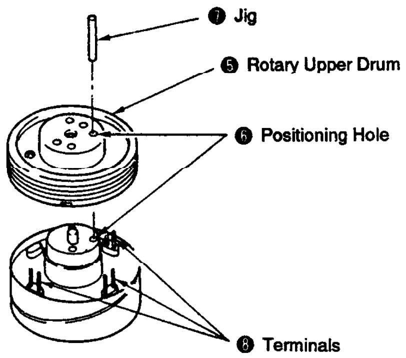


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

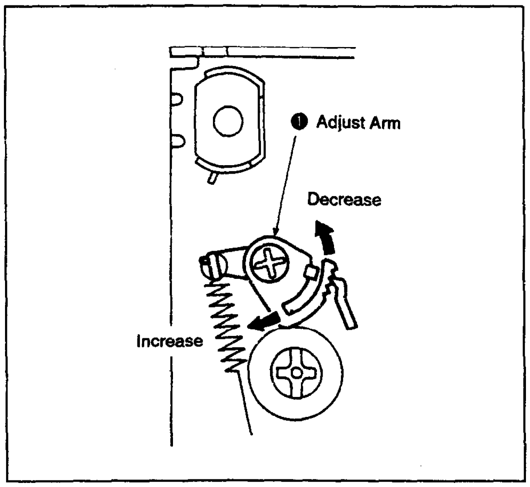


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.
  Example:
  NTSC ········ GV-8
  PAL ·········· GV-8E
  Connect Pins ① and pin ③ of CN017 on the {SV-34 board (GV-8) / SV-35 board (GV-8E)} to pin ② of it. (See Fig. 4-1)

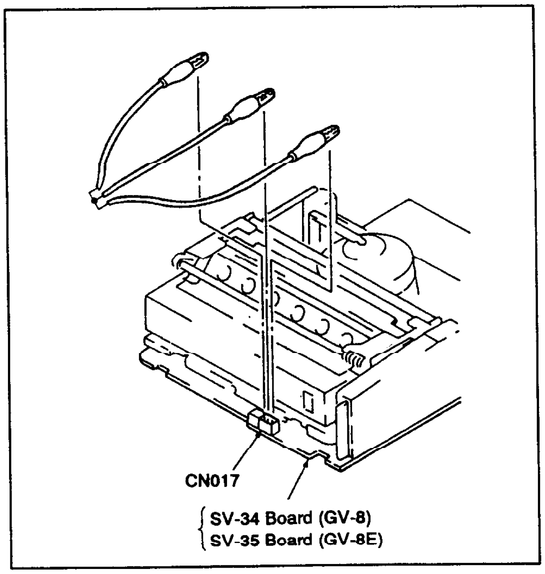
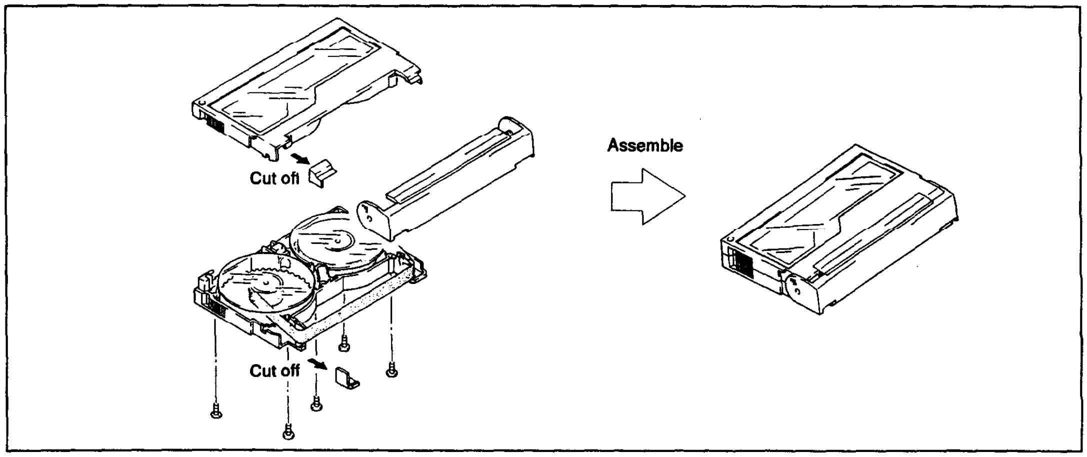


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Cut off
Assemble

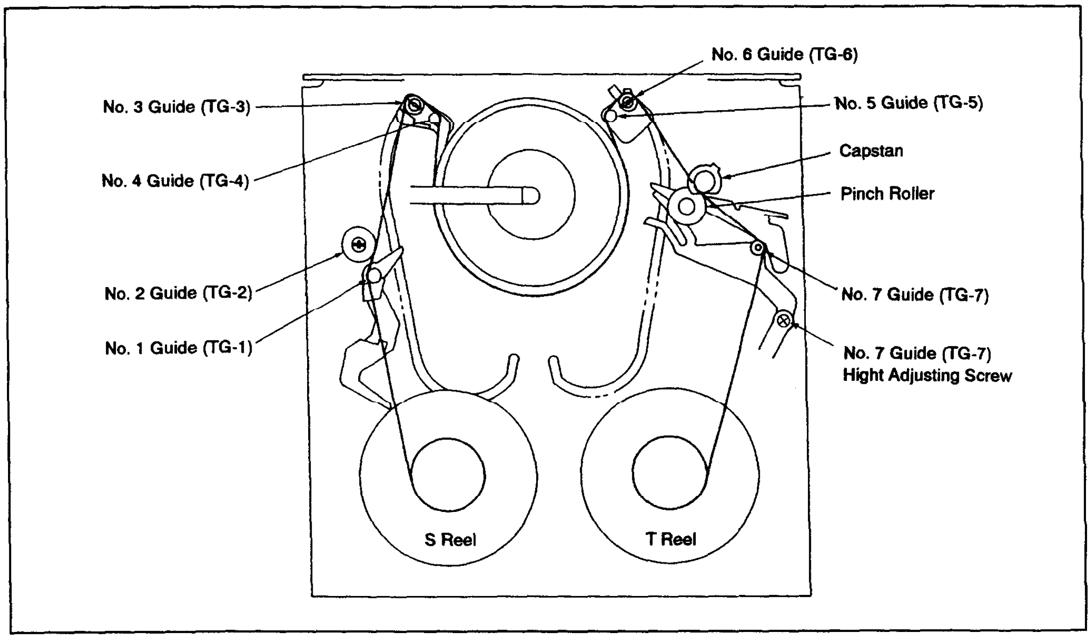

No. 6 Guide (TG-6)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
Capstan
No. 4 Guide (TG-4)
Pinch Roller
No. 2 Guide (TG-2)
No. 7 Guide (TG-7)
No. 1 Guide (TG-1)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   { SV-34 board (GV-8)
   { SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

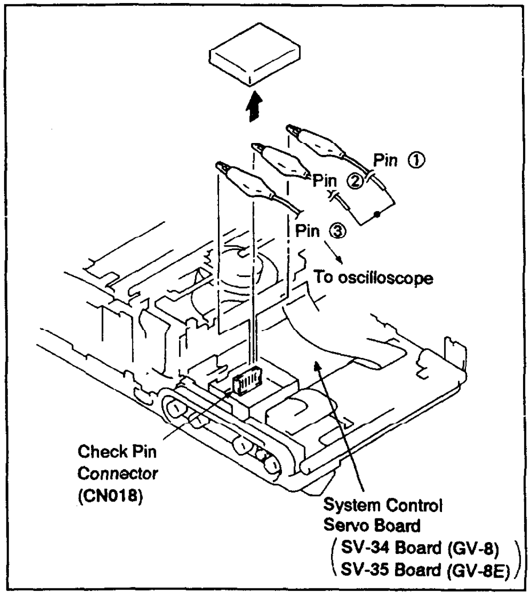

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
(SV-34 Board (GV-8))
(SV-35 Board (GV-8E))

Fig. 4-3.

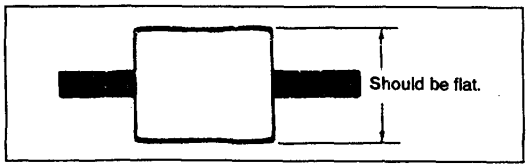

Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.

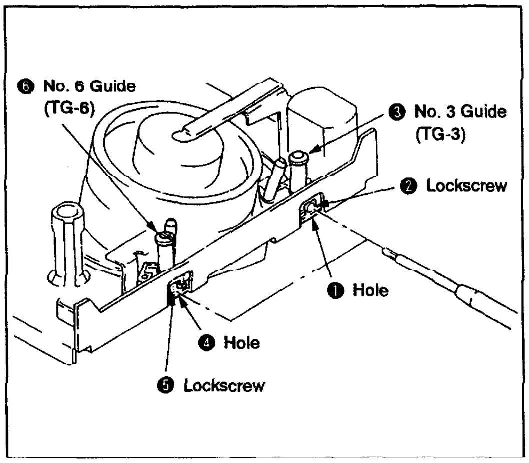

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

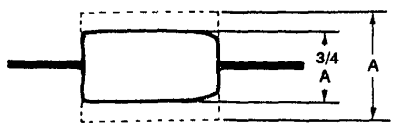


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

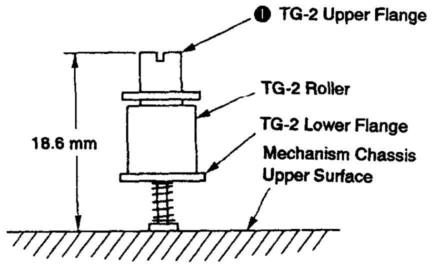


Fig. 4-7.

[Reference]
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment (See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.
   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

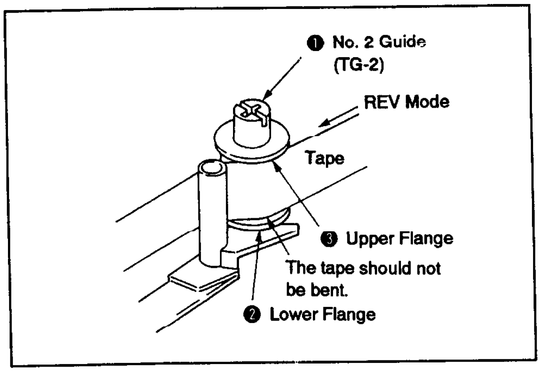

❶ No. 2 Guide (TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

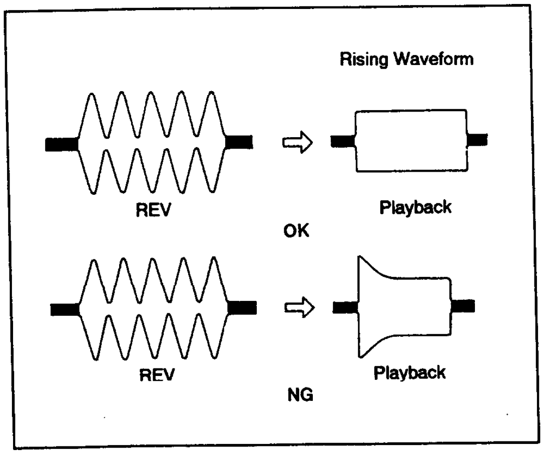

Rising Waveform
REV
OK
Playback
REV
NG
Playback

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT (See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷ . If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less) . If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

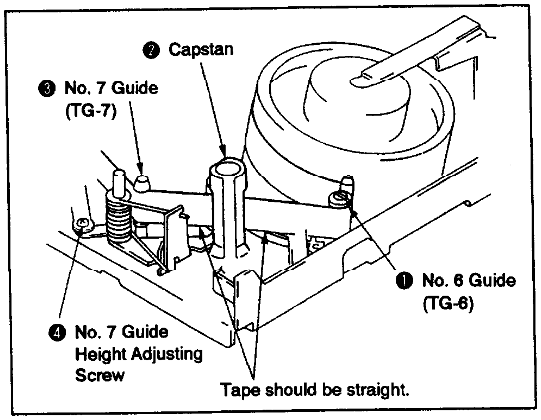

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
❹ No. 7 Guide Height Adjusting Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

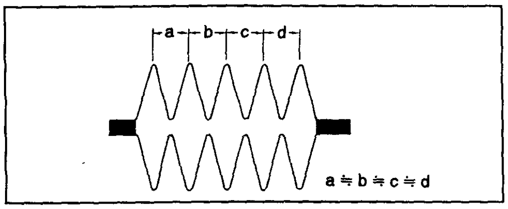


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

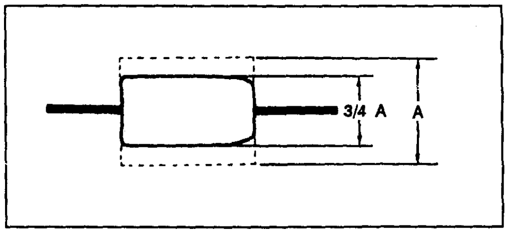


Fig. 4-12.

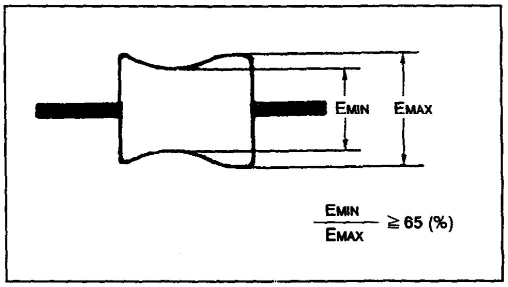


Fig. 4-13.

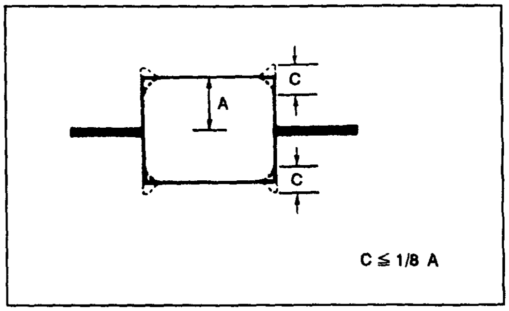


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

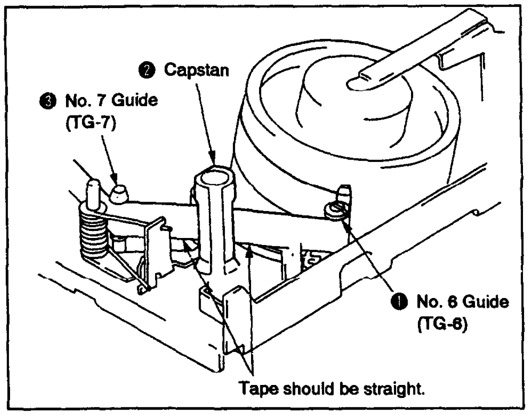

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

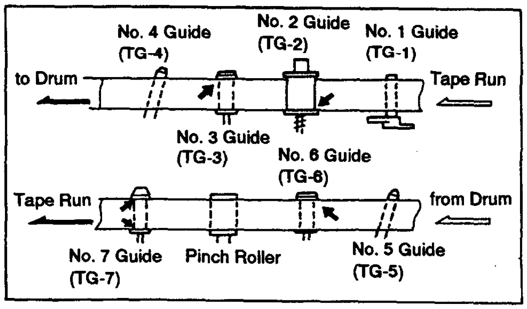

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
to Drum
Tape Run
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
Tape Run
from Drum
No. 7 Guide (TG-7)
Pinch Roller
No. 5 Guide (TG-5)

Fig. 4-16.